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THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

April 1, 1922

Number 1

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

THE INSECT PEST SURVEY
BULLETIN

A monthly journal of entomological researches conducted by the United States

Vol. 10
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Collaborators of the United States Department of Agriculture acting as.
Reporters for the Insect Pest Survey

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Arkansas	Prof. G. C. Becker, Chief Inspector, State Plant Board, Little Rock. Mr. W. J. Baerg, Entomologist, Agricultural Experiment Station, Fayetteville.
California	Mr. H. S. Smith, Entomologist, Office of Plant Pest Control, State Department of Agriculture, Sacramento. Dr. W. B. Herms, Head of Division of Entomology and Parasitology, University of California, Berkeley.
Colorado	Dr. C. P. Gillette, State Entomologist, Agricultural Experiment Station, Fort Collins.
Connecticut	Dr. W. E. Britton, State Entomologist, Agricultural Experiment Station, New Haven.
Delaware	Prof. C. O. Houghton, Biologist, Agricultural Experiment Station, Newark.
Florida	Mr. Jeff Chaffin, Assistant Nursery Inspector, State Plant Board, Gainesville.
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Kansas	Dr. G. O. Hockett, Entomologist, Agricultural Experiment Station, Manhattan.
Kentucky	Prof. G. W. Hockett, Entomologist, University of Kentucky, Lexington. Prof. H. B. Smith, Entomologist, Agricultural Experiment Station, Lexington.
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Montana	Prof. R. A. Cooley, State Entomologist, Agricultural Experiment Station, Bozeman. Mr. A. L. Strand, Assistant State Entomologist, Agricultural Experiment Station, Bozeman.
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New Mexico	Dr. R. L. Middlebrook, Agricultural Experiment Station, State College.
New York	Dr. E. P. Felt, State Entomologist, University of the State of New York, Albany. Prof. C. R. Crosby, Extension Entomologist, Cornell University, Ithaca. Mr. P. J. Parrott, Entomologist, Agricultural Experiment Station, Geneva.
North Carolina	Prof. F. Sherman, Chief in Entomology, State Department of Agriculture, Raleigh.
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Ohio	Prof. H. A. Gossard, Entomologist, Agricultural Experiment Station, Wooster. Dr. Herbert Osborn, Entomologist, Ohio State University, Columbus. Dr. R. C. Osburn, Entomologist, Ohio State University, Columbus.
Oklahoma	Prof. C. E. Sanborn, Entomologist, Agricultural Experiment Station, Stillwater.
Oregon	Prof. A. L. Lovett, Entomologist, Oregon Agricultural College, Corvallis.
Pennsylvania	Mr. J. G. Sanders, Director, Bureau of Plant Industry, State Department of Agriculture, Harrisburg.
Rhode Island	Dr. A. E. Stene, Entomologist, State Board of Agriculture, Kingston.
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South Dakota	Prof. H. C. Severin, State Entomologist, Agricultural Experiment Station, Brookings.
Tennessee	Prof. G. M. Bentley, State Entomologist and Plant Pathologist, State Board of Agriculture, Knoxville.
Texas	Dr. M. C. Tanquary, State Entomologist, Agricultural Experiment Station, College Station. Mr. E. E. Scholl, Chief Inspector, State Department of Agriculture, Austin.
Utah	Prof. H. J. Pack, Entomologist, Agricultural Experiment Station, Logan.
Virginia	Prof. W. J. Schoene, State Entomologist, State Crop Pest Commission, Blacksburg.
Washington	Dr. A. L. Melander, Entomologist, Agricultural Experiment Station, Pullman.
West Virginia	Prof. W. E. Rumsey, State Entomologist, Agricultural Experiment Station, Morgantown. Prof. E. M. Peairs, Entomologist, Agricultural Experiment Station, Morgantown.
Wisconsin	Prof. S. B. Fracker, State Entomologist, State Department of Agriculture, Madison. Prof. H. F. Wilson, Entomologist, University of Wisconsin, Madison.



INTRODUCTORY STATEMENT

In presenting the initial number of the second volume of the Bulletin, the Insect Pest Survey wishes formally to thank its Collaborators for the very sincere and painstaking efforts they have made in obtaining and transmitting information relative to insect conditions in their respective territories. It wishes, also, to express its appreciation of the commendations they have made of the Survey's work, both in correspondence and in the resolutions adopted at the Annual Meeting of the American Association of Economic Entomologists held at Toronto.

The coming season's reports promise to be much more complete than those of last year. The Collaborators in most cases have organized definitely for Survey work, some with a special force of assistants, and others by a cooperative arrangement with the Extension Service of the State, thus utilizing the County Agent force. The scope of the Survey's work is much better appreciated than when the work was inaugurated, and the Collaborators are reporting all notes on insect conditions at the present time, realizing that what might seem a trivial and normal condition may prove of inestimable value, when associated with similar reports from several other Collaborators.

One of the greatest difficulties experienced in summarizing the data received is in interpreting the comparative terms used in describing the extent of destructiveness of a pest. This is no fault of the reports but serves to accentuate the lack of definite standards in this field. The nearest approach to these definite standards is the percentage of infestation and percentage of damage figures that are being used in some of the major pest surveys.

The Annual Summary of the insect conditions for 1921 is now about ready for publication. The scope of this work was necessarily modified from that set forth in the Introductory statement of Volume 1. The entire field could not be covered with the limited force at command, so nineteen of the more important and interesting pests were selected and reviewed.

OUTSTANDING ENTOMOLOGICAL FEATURES
FOR THE WINTER OF 1921-22
AND THE SPRING OF 1922 UP TO APRIL 1.

The Hessian fly situation has not been reported as at all serious in any of the important wheat-growing sections this spring.

Over the region infested by the chinch bug the winter has been comparatively mild and observations in Illinois indicate that the winter mortality of this pest was extremely low. The adults became active in southern Illinois during the middle of March. Investigations made in Ohio indicate that this pest normally hibernates in farm wood lots and not in the weeds and grass along the fence rows as was formerly believed to be the case.

An interesting phase of the green-bug situation has developed this spring. Surveys carried on by the Bureau of Entomology indicate that there is practically no infestation of the green bug in northern Texas this year, the severe droughts of last summer having prevented the growth of volunteer wheat. In northern Oklahoma and eastern Kansas, however, there seems to be a sufficient green-bug infestation to start an outbreak in these regions, if weather conditions are favorable. This seems to indicate that the outbreaks of the green-bug in Oklahoma and Kansas are not necessarily the result of the northward migration of this pest from northern Texas.

The false wireworms have become seriously abundant and destructive in western Kansas and Nebraska. The dry fall and winter in many localities prevented germination of the seed until this spring, and the false wireworms have consequently been favored by this condition.

The corn borer that was discovered in Texas and northern New Mexico last summer has been determined this spring as Diatraea lineolata Walker. The Survey carried on this spring indicates that in the Big Bend country of Texas the infestation amounts to 50 per cent of the corn.

The seed-corn maggot again appeared on the Atlantic Seaboard this spring, having been reported from North Carolina on March 6. This pest has also been reported this year in Alabama and Louisiana.

THE HISTORY OF THE CITY OF BOSTON FROM 1630 TO 1800

The first settlement in Boston was made in 1630 by a group of Puritan ministers and laymen, known as the "Founding Fathers," who had fled from the religious persecution in England. They established a colony on the eastern shore of Massachusetts Bay, and the city of Boston was founded. The colony was governed by a council of elders, and the city was known for its strict religious and moral standards.

In 1688, the city was taken over by the British, and the colony was merged with the Province of Massachusetts. The city continued to grow, and by 1700, it was one of the largest and most important cities in the colonies. The city was known for its commerce, industry, and education. The city was also a center of religious and political activity.

In 1773, the city was the site of the Boston Tea Party, a protest against British taxation. The city was then the center of the American Revolution. The city was the site of the Battle of Boston, and the city was the first capital of the United States.

The city continued to grow, and by 1800, it was one of the largest and most important cities in the United States. The city was known for its commerce, industry, and education. The city was also a center of religious and political activity.

The city was the site of the Boston Convention, and the city was the first capital of the United States. The city was the site of the Boston Convention, and the city was the first capital of the United States.

The variegated cutworm was exceedingly abundant in January in the State of Simloa, Mexico, where it is one of the serious pests attacking the commercial tomato and pepper plantations.

The southern green plant-bug is again becoming destructive in southern Alabama. This pest has not been troublesome since the freeze of 1918.

The boll weevil passed the winter very successfully in Alabama, this spring's examinations showing that 16 per cent of the beetles were alive. This is about five times the normal average and indicates that with favorable weather a serious boll-weevil year may be expected in this region.

About 40 per cent of the papaya fruit in the Fort Myers district of Florida was destroyed by the papaya fruit fly.

Florists in Maryland, New York, and Massachusetts are reporting serious déprédations by the chrysanthemum gall midge.

The cyclamen mite is reported as very serious in greenhouses in the Baltimore and Philadelphia districts where it is attacking cyclamen and snapdragon.

The strawberry leaf-beetle as a rose pest in greenhouses is attracting considerable attention this spring. Reports of serious injury have been received from Massachusetts and Pennsylvania.

CEREAL AND FORAGE - CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

New York C. R. Crosby (survey for 1921). "During the late summer of 1921, the Bureau of Entomology, in cooperation with this office, made very careful counts of wheat stubble throughout New York State to ascertain the percentage of infestation by the Hessian fly. The samples were taken at various points throughout the counties, this office taking 25 straws in a sample while the Bureau of Entomology examined from 20 to 50 straws. The samples were taken at from 4 to 20 different places in each county with the following results:

	<u>Per cent</u>		<u>Per cent</u>
Cayuga.....	6.9	Ontario.....	4.0
Columbia.....	9.9	Orleans.....	10.6
Erie.....	8.2	Seneca.....	2.6
Genesee.....	7.6	Tompkins.....	12.4
Livingston.....	4.2	Ulster.....	6.4
Monroe.....	2.8	Wayne.....	9.3
Niagara.....	12.3	Wyoming.....	4.9

"This makes an average infestation for the State in last year's stubble of 7.3 per cent."

Iowa C. N. Ainslie, Bureau of Entomology. "Examinations made late in October, 12 miles from Sioux City, showed plenty of eggs and larvae as well as pupae in volunteer wheat at that time. Twenty miles north of this point no trace of the fly could be found. In this latter region no volunteer wheat was found in the fields examined and the sown grain was quite free. On the Missouri River bottoms to the south the infestation was very general, but the injury will probably be slight."

Nebraska M. H. Swenk (November 18, 1921). "The only report of serious injury to the new wheat by the Hessian fly coming to our attention during the period here covered (October 15 to November 18, 1921) was from York County during the middle of October in early sown fields."

(March 15.). "Examinations of the winter wheat in various localities indicate that the Hessian fly is present about as it was in the Spring of 1921. The outlook at present does not look particularly serious."



Missouri

J. R. Horton, Bureau of Entomology (October 31, 1921). "Examinations in 8 counties showed that the most serious infestation in this State is in the southeastern third, here the infestation ranging from 19 to 32 per cent. Through the center of the State the infestation ranges from 5 to 6 percent, while in the north-western third of the State the infestation in the single county inspected showed 2 per cent infestation. The infestation in the several counties was as follows:

	<u>Per cent</u>		<u>Per cent</u>
Wright.....	6.6	Madway.....	2.0
Boone.....	5.3	Mississippi.....	32.0
Perry.....	19.5	Crawford.....	22.7
Green.....	5.2	St. Louis.....	27.9

Kansas

J. R. Horton, Bureau of Entomology (Oct. 31, 1921). "Several examinations of wheat were made during the fall of 1921 to ascertain percentage of infestation and the relative parasitism. On September 3, examinations were made in the middle portions of southern Kansas, at which time volunteer wheat was well advanced in the fields, having been about 1 inch high on August 8, having developed 3 or 4 leaves on August 17, and having begun tillering on August 29. The condition of the flaxseeds during this month was as follows: Empty but not parasitized, 30.7 per cent; containing healthy larvae, 30.2 per cent; containing diseased and dried-up larvae, 16.4 per cent; containing living parasites, 10.2 per cent; containing parasite emergence holes, 12.3 per cent. Up to that time no pupae were found, nor had any emergence been observed. Infestation ranged from 7 to 26 per cent, averaging 14.1 per cent. On October 31, county examinations gave the following results:

	<u>Per cent</u>		<u>Per cent</u>
Russell.....	0.5	Cowley.....	1.0
Ellsworth.....	0.4	Sedgwick.....	6.0
Rush.....	2.0	McPherson.....	0.6
Barton.....	0.0	Saline.....	1.0
Sumner.....	2.2	Ellis.....	0.4

"During the month of October only one-third of the total number of Hessian fly pupae examined were alive. A heavy mortality also occurred among the larvae during the month of September. (Nov. 1). At this time examinations of flaxseeds show empty but not parasitized puparia, 18 per cent; healthy Hessian fly larvae, 58.5 per cent; Hessian fly pupae, 1.5 per cent; diseased, or dried-up larvae, 16.5 per cent; and parasitized larvae, 5.5 percent."

G. A. Dean (March 13). "We are receiving few inquiries concerning the Hessian fly. There is some infestation by the Hessian fly over the entire eastern half of the State, but with the exception of a few places we do not anticipate any injury."

- Arkansas J. R. Horton, Bureau of Entomology (Oct. 31, 1921). "Examinations made in Washington County showed infestation less than 0.5 per cent. In Greasy County, infestation averages 3.2 per cent."
- Oklahoma J. R. Horton, Bureau of Entomology (October 31, 1921). "Examinations made in the several counties in Oklahoma showed the following results: No Hessian fly found in Woods County, Canadian County, Key County, and Craig County. Ottawa County averaged 2.9 per cent, Garfield County 1.2 per cent, and Tulsa County 0.6 per cent."

CHINCH BUG (*Blissus leucopterus* Say)

- Illinois S. C. Chandler (March 14). "Chinch bugs are becoming active on warm days in southern Illinois. Apparently very little mortality has resulted during the winter."
- Ohio T. H. Parks (March 17). "Examinations made today in northwestern Ohio to determine the hibernating quarters showed that probably nine-tenths of all living chinch bugs hibernated in the fallen leaves of farm wood lots. Woods located 1/2 mile from previously infested cornfields were found to contain the hibernating bugs. None were found in dense bluegrass along roadsides and fence rows."

GREEN BUG (*Toxoptera graminum* Rond.)

W. R. Walton, Bureau of Entomology (March 3). "We are at last in a position to give you a summary on the green-bug situation in Texas, Oklahoma, Kansas, and southwestern Missouri."

"In northern Texas, where the green bug was so abundant last year at this time, it has been impossible for our men, Mr. C. H. Gable and Mr. E. E. Russell, to find any trace of infestation. The late summer was very dry, preventing the growth of volunteer grain, and this is believed to have prevented the development of the insect. On the other hand, Mr. Horton reports the green bug present in the following counties in Oklahoma: Grady, Muskogee, Caddo, Tulsa, Logan, Washington."

The insect has been reported as present, either by Mr. Horton or the Kansas State men, from the following counties of Kansas: Montgomery, Neosho, Linn, Labette, Allen, Miami, Cherokee, Bourbon, Leavenworth, the last county having been reported by Prof. Dean.

"In Missouri, Prof. Haseman reported a slight infestation in Jasper County in the southwestern corner of the State."

"The green-bug situation as it appears at the present time is most interesting for these reasons: The prevalent opinion during past years has been that serious outbreaks in Oklahoma and Kansas are the result of excessive breeding of this pest in Texas and a heavy northerly migration, whereas the present Survey shows unmistakably that in spite of the fact that there is no infestation in Texas, enough infestation exists in Oklahoma and Kansas to serve as a starter for a very serious infestation this spring, given favorable weather conditions."

This seems to justify the contention that in all probability the great outbreaks of Toxoptera have not been due to early migration, but to the development of the insect in volunteer grain throughout the regions most seriously infested, and the apparent progress of the insect northward is due more to the progress of spring than to migrations of the adult Toxoptera. The present evidence, of course, is not conclusive but is enlightening with respect to this matter."

Kansas J. R. Horton, Bureau of Entomology (March 16). "March examination shows the following status of the green bug in several counties in Kansas: Examinations were made in Sedgwick, Sumner, Harvey, McPherson, Seline, Dickerson, and Marion Counties, and no green bug was found with the exception of two nymphs which were found in a field two miles south of Bell Plaine in Sumner County. Wheat is generally in good condition due to recent rains. During most of the winter it has been poor owing to severe drought, and practically no volunteer and little of the seed grain sprouted until February - conditions which are rather unfavorable for aphids."

Meromyza punctifer Becker

Oregon L. P. Rockwood, Bureau of Entomology (March 8). "I have just received the Meromyza material reared from wheat collections during the outbreak in Union County, Oregon, in June and July, 1921, determined by Dr. J. M. Aldrich, who found but one Meromyza americana Fitch in this lot, all the other specimens being M. punctifer. It would be advisable, therefore, to change the records published in the last volume of the Survey Bulletin on this outbreak so as to refer to M. punctifer as the species causing the damage. However, I think it would be advisable to retain the record of the occurrence of M. americana in this region, as it has been stated that this species does not occur west of the Rocky Mountains."

WHEAT MIDGE (Contarinia tritici Kirby)

Washington L. P. Rockwood, Bureau of Entomology (March 8). "The wheat midge, records of which were published in the Insect Pest Survey Bulletin, Volume 1, No. 4, page 147, and Volume 1, No. 5, page 188, should be corrected. Dr. E. P. Felt has determined the material from this infestation as Thecodiplosis mosellana Gehin. Similar material was reared from wheat collected at Batavia, N.Y. in 1912, by Dr. Felt."

JOINTWORM (Harmolita tritici Fitch)

New York C. R. Crosby (March 22). "A very complete survey was carried on during the late summer of 1921 to ascertain the infestation of wheat by the jointworm in the more important grain-growing counties of New York State. These examinations were made co-operatively by this office and the Bureau of Entomology, with the following results:

New York

	<u>Per cent</u>		<u>Per cent</u>
Ontario.....	4.4	Cayuga.....	3.2
Orleans.....	3.5	Columbia.....	0.3
Seneca.....	2.6	Erie.....	0.3
Tompkins.....	0.8	Genesee.....	6.9
Ulster.....	2.6	Livingston.....	4.9
Wayne.....	5.1	Monroe.....	4.3
Wyoming.....	1.1	Niagara.....	0.9

"The average infestation for the State being 2.9 per cent."

WHEAT-SHEATH GALL JOINTWORM (Harmolita vaginicola Doane)

"C. R. Crosby (March 22). "In connection with the Hessian fly and jointworm survey carried on late last summer, observations were also made on this insect with the following results. No infestation in Ontario, Tompkins, Erie, Orleans, Wyoming, Genesee, Seneca, Columbia, and Niagara Counties.

<u>County</u>	<u>Per cent</u>
Ulster.....	0.3
Wayne.....	.2
Monroe.....	.1
Livingston.....	.2
Cayuga.....	2.1

"A 0.2 per cent infestation average for the State."

APPLE-GRAIN APHIS (Rhopalosiphum prunifoliae Fitch)

Nebraska M. H. Swenk (November 18, 1921). "In Baker County growing wheat was found rather heavily infested around the roots by the apple-grain aphid, but not a great amount of damage was done by it."

FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (November 18, 1921). "In Garden County the wheat has nearly all been more or less damaged by the Great Plains false wireworm, and some fields were practically destroyed during the period covered by this report (October 15 to November 15)."

Kansas J. W. McColloch (March 25). "This insect is making its appearance in wheat fields of western Kansas where it did a large amount of damage last fall, due to the dry weather and the poor germination of the grain. In many parts of the State the wheat did not germinate last fall and has laid over winter in the ground. Recent rains have started the seed to germinate and apparently stimulated the false wireworm to greater activity. As this insect will be in the larva stage for about another month, we may anticipate even greater injury."

HOHORN CRICKET (Anabrus simplex Wald.)

Montana A. L. Strand. "Through a mistake in identification which has since been cleared up, the common cricket, Saracanthus scabriceollis Thom., was reported in Volume 1, No. 5 of the Insect Pest Survey Bulletin as occurring in Toole and Teton Counties. This should have been the Hohorn cricket, Anabrus simplex."

Arctia distincta Will.

Nebreska M. H. Swenk (November 18, 1921). "Heavy flights of this beetle were observed in the wheat fields in Cheyenne County early in November, but no injury was done."

WHITE GRUBS (Phyllophaga spp.)

West L. M. Peairs (March 10). "Larvae are quite numerous about Morgentown, full-grown grubs being within 10 to 12 inches of the surface."
Virginia

CUTWORMS (Undetermined)

Kansas G. A. Dean (March 13). "We are receiving a few reports of cutworms from the south-central part of the State. These are in wheat."

CORN

A NEW CORN BORER (Diatraea lineolata Walker)

Texas W. R. Walton, Bureau of Entomology (March 19). "During the summer of 1921, Mr. R. A. Epperson, one of the inspectors of the Federal Horticultural Board, employed under the direction of Dr. W. D. Hunter on the Mexican border, discovered that a lepidopterous stalk-borer was very numerous in the corn in the Rio Grande Valley from El Paso southward through the Big Bend country, being especially numerous on the Mexican side of the line. Messrs. C. H. Gable and R. A. Epperson were assigned to investigate the insect with a result that a single adult was reared which was determined during the month of February this year as Diatraea lineolata Walker. The late Mr. W. R. McConnell had studied this insect at Carlsbad, New Mexico, during the month of February, 1914, and the following year.

"Messrs. Gable and Epperson conducted a survey in the Big Bend Country of Texas during the first ten days of February this year and found the insect present in all cornfields in Brewster County, and as far north as Las Cruces, New Mexico. The infestation was heavier along the river than elsewhere. Here it was impossible to find an uninjured stalk. In some fields where only stubble was found there had been approximately 50 per cent infestation and 25 per cent of the dead stubble contained living larvae. Sugar cane and milo maize were also attacked, although

the latter was but slightly injured. The insect is believed to be present in the Pecos Valley of New Mexico although this report has not been confirmed.

"The information regarding the biology of the insect so far collected indicates that its life history closely parallels that of Diatraea zeacoloides and D. saccharalis. There are probably two generations annually, the second one wintering as larvae in the root stock of the corn. The insect is believed to have been conveyed across the Mexican border in fodder carried by the Mexicans for their horses and burros."

CLOVER

GREEN CLOVER WORM (Plathypena scabra Fab.)

New York E. P. Felt (December 17, 1921). "Mr Roy Latham, of Orient Point, reported that quite a number of the moths were flying on the evening of December 17."

GRASS

LUBBER GRASSHOPPER (Dictyophorus reticulatus Thunb.)

Florida H. W. Fogg (March 18). "This insect is normally abundant about Eustis in Lake County."



FRUIT INSECTS

APPLE

CODLING MOTH (Carpocapsa pomonella L.)

Idaho Claude Wakeland (March 18). "Field men of the Department of Agriculture report that in certain parts of the State, especially in the Boise Valley, most of the codling moth larvae wintering above the snow line have been killed by the extremely low temperatures."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

New York C. R. Crosby (December 19, 1921). "Specimens of crab-apple trees slightly infested in New York City."

APPLE TWIG-MINER (Marmara elotella Busck)

Connecticut M. P. Zappe (March 24). "The insects seem to be quite plentiful in a portion of an orchard at Branford where this pest has been observed in previous years."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

New York E. P. Felt (March 23). "Mr. Henry Bird reports, from Rye, that this insect was the most important pest last year in parts of Westchester County and it presumably will be equally abundant during the coming season. There appear to be four broods and the activities of native parasites were noticeable."

SPRING CANKERWORM (Paleacrita vernata Peck)

Missouri A. F. Satterthwait (February 18). "Five males were caught by hand, and others were seen in flight, attracted to an out-door electric light between the hours of 7 and 10 p. m. The weather has been fair and mild but the frost is not yet out of the ground at Webster Groves."

FALL CANKERWORM (Alsophila pometaria Harr.)

Ohio H. A. Gossard (March 18). "Cankerworm moths, which may have been either of the fall or spring species, most probably the former, were reported by Mr. C. F. Irish to have appeared in Cleveland on February 23. Male moths were seen in Wooster the 1st of March."

BUFFALO TREE-HOPPER (Ceresa bubalus Fab.)

Connecticut M. P. Zappe (March 24). "Orchards in both North Haven and Branford show many oviposition scars on the twigs and smaller branches. This pest, apparently, has been present for several years. These scars are present, although less numerous, on pears."

- New York C. R. Crosby (February 9). "Oviposition scars present on apple and pear at Fernwood February 14. Several acres of young trees at Truxton with many egg scars."
- Ohio H. A. Gossard (March 18). "We have received dozens of specimens of twigs of fruit trees damaged by the buffalo tree-hopper, C. bubalus, and Stictocephala inermis. Reports of such injuries have exceeded the average."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- Connecticut W. E. Britton (March 8). "This insect has been rather scarce for several years and now seems to be increasing."
- New York E. P. Felt (March 23). "Mr. Henry Bird reports that this insect appears to be absent in parts of Westchester County."
- Illinois S. C. Chandler (March 14). "Owing to the mild weather, the mortality of the San Jose Scale has been rather low at Olney. Of 1,000 scales examined, 522 were alive."

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- New York C. R. Crosby (January 14). "Ten acres of apples 3 miles northwest of Ithaca are badly infested with this insect."

SCURFY SCALE (Chionaspis furfura Fitch)

- New York C. R. Crosby (February 1). "Four rows of old apple trees at Upper Red Hook are very badly infested."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

- New York C. R. Crosby (January 17). "Observed an infested tree at Katonah."
- Ohio H. A. Gossard (March 18). "This insect was received three times and there were eight or ten additional inquiries about the control of this pest without specimens."

ROUNDHEADED APPLE-TREE BORER (Saperda candida Fab.)

- Ohio H. A. Gossard (March 18). "Among orchard insects the roundheaded apple-tree borer was received from East Canton."

PEACH

CHERRY SCALE (Aspidiotus forbesi Johns.)

- Maryland E. N. Cory (February 24). "This pest has multiplied about Berlin in spite of spraying, probably being protected by the scaly bark due to peach scab."

PEACH BORER (Aegeria exitiosa Say)

Pennsyl- S. W. Frost (fall of 1921). "Paradichlorobenzene has been placed about
vania trees of several orchards in Adams as well as other counties in Pennsyl-
vania. An examination of the trees in Adams County on November 1st
showed no evidence of any of the chemical being left."

Ohio H. A. Gossard (March 18). "A large number of inquiries, two or three
dozen of them during the past two months, indicate great interest in the
use of paradichlorobenzene for the peach-tree borer."

LESSER PEACH TREE BORER (Aegeria pictipes G. & R.)

Ohio H. A. Gossard (March 18). "The lesser peach-tree borer was the subject
of a few inquiries and observations in peach orchards, which are frequent-
ly cultivated and, therefore often scarred and bruised, showed that such
orchards are quite run down with this pest as compared with orchards not
cultivated so often."

PLUM

PLUM GALL-MITE (Eriophyes phloeocoptes Nal.)

Ohio H. A. Gossard (March 18). "On March 15 the plum gall mites had become
active and were creeping over the outside of the galls in dozens and were
swarming within by hundreds."

RASPBERRY

STRIPED TREE CRICKET (Oecanthus nigricornis Walk.)

Ohio H. A. Gossard (March 18). "We have received dozens of specimens of
orchard twigs and the canes of small fruits injured by the tree cricket.
Reports of such injuries have exceeded the average."

BLACKBERRY

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

Florida Jeff Chaffin (March 18). "Thrips are very numerous and will, no doubt,
do quite a bit of damage to commercial blackberry plants in the vicinity
of Bradentown (Manatee County). This is the first year I have noticed
this pest."

CURRENT

IMPORTED CURRENT BORER (Aegeria tipuliformis Clerck)

New York C. R. Crosby (December 30, 1921). "Infested canes were received from
East Hampton today."



GRAPE

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Ohio H. A. Gossard (March 18). "Five inquiries about the control of the rose beetle during January and February indicate that this insect was locally abundant last season and is expected again this year. Reports of such injuries have exceeded the average."

CITRUS FRUIT

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

Florida J. R. Watson (March 20). "This thrips, which marks and scars the fruit while in bloom, appears to be more numerous this year throughout the entire State."

PAPAYA

PAPAYA FRUIT FLY (Toxotrypana curvicauda Gerst.)

Florida W. R. Eberhardt (March 11). "This insect has damaged about 40 per cent of the fruits in the Ft. Myers district, where it has been noticed for the first time this year."

TRUCK - CROP INSECTS

POTATO AND TOMATOPOTATO BEETLE (Leptinotarsa decemlineata Say)

Louisiana T. H. Jones (March 13). "Mr. R. W. Axt observed beetles recently among seed potatoes at planting time. Without doubt these entered the containers in the field or a near-by shed."

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

Louisiana T. H. Jones (December 18, 1921). "Under date of December 18 Mr. Foulks wrote 'The maggots are beginning to work on my cabbage crop and I feel a little uneasy about them.' No specimens of the maggots were sent but I am of the opinion that they probably were this species, which has caused some damage on this truck farm in previous years."

North Carolina R. W. Leiby (March 6). "A letter from Mr. D. C. McCotter of Cash Corner, Pamlico County, says: 'I am sending you, under separate cover, specimens of seed potatoes showing the same maggot worm that attacked the crop last season. It has appeared again this season and is likely to do as great damage to the crop as it did last year. The specimens I am sending you have been in the ground about three weeks. The last planting has not yet been attacked but I am fearful that it will be in a short time. I have about 100 acres already planted and about the same acreage to plant. Have stopped planting until you can send a man here to assist me in arranging some solution of this matter to see if the seed can not be treated in some way before planting. Unless something is done right away, the crop will most certainly be a failure.' On the same date a telegram was received from Mr. W. L. Stancil, Secretary of the Chamber of Commerce of Beaufort, which read as follows: 'Irish potatoes that have been planted are being attacked by a maggot in Carteret County. Please advise at once what to do or send man to investigate. Only a small part of crop planted. If seed can be treated wire formulae. Prompt action must be taken.'"

Alabama J. M. Robinson (March 15). "This insect was reported here about March 5, the maggots being about half grown, and we are attempting to check up on the life history here at Auburn."

CORN EAR-WORM (Heliothis obsoleta Fab.)

Mexico R. H. Van Zwaluwenburg (January 14). "The tomato fruitworm has not showed up yet in this part of the State of Sinaloa in any numbers. Only a few eggs have been found so far this season. Two years ago this insect practically ruined the crop in the Culiacan district in February, March, and April. I am informed that there are between 7,600 and 7,800 acres of tomatoes planted on this coast between Nayarat and the south Sonora line, equivalent to about 5,500 acres in good condition. The crop began to move about the middle of January and will continue into April if the market holds."



VARIEGATED CUTWORM (Lycophotia margaritosa Haw.)

Mexico R. H. Van Zwaluwenburg (January 14). "The variegated cutworm is extremely abundant in this section, Las Mocthis, Sinaloa, on tomatoes and peppers, causing repeated replanting in many cases. Mr. F. L. Yeaw says it is especially destructive to peppers, destroying buds and young fruit. It has destroyed approximately 50 per cent of the first cutting of tomatoes. In one instance 60 worms were found at the base of a single plant."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Alabama W. E. Hinds (December 24, 1921). "These insects have increased in numbers gradually since the very great reduction, which occurred during the first week of February, 1918, when the temperature dropped to about 10 degrees above zero in the southeastern part of Alabama. On account of that cold weather following a very warm January, these bugs were so greatly reduced that they were hardly noticeable in 1918. During the past fall, however, they have become so abundant as to cause complaint. If the present winter continues to be mild we must look forward to serious damage from this pest in southern Alabama during this season."

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

Florida Jeff Chaffin (March 18). "Mr. Briggs reports that this thrips is doing some damage to tomatoes in the Bradentown section in Manatee County."

C A B B A G E

CABBAGE APHIS (Brevicoryne brassicae L.)

Texas M. C. Tanquary (January 30). "A report, dated January 13, of the appearance of lice on cabbage at San Benito, Tex., has been received. There were not many lice at that time but they were beginning to appear in a cabbage patch of 100 acres."

S T R A W B E R R Y

STRAWBERRY FLEA-BEETLE (Haltica ignita Illig.)

Florida J. Chaffin (March 8). "Several reports have been received during the past ten days of this insect doing serious damage to the strawberry plantings in Polk and Hillsboro Counties."

COTTON RED SPIDER (Tetranychus telarius L.)

Louisiana T. H. Jones (March 15). "Judging from reports, red spiders have caused considerable injury to strawberries in Louisiana this spring. We received letters from Springfield, La., dated February 27, and Panchatula, dated March 6, complaining of damage, and I have received verbal reports to the effect that they have been and are doing damage in fields in the parish of Tangipahoa, the important strawberry-growing section of the State."

THE HISTORY OF THE UNITED STATES

The first part of the history of the United States is the period from the discovery of the continent by Christopher Columbus in 1492 to the establishment of the first permanent settlements. This period is characterized by the exploration of the continent by Spanish, French, and English explorers, and the establishment of the first permanent settlements by the English in 1607.

THE PERIOD OF THE FIRST SETTLEMENTS

The period of the first settlements is the period from the establishment of the first permanent settlements in 1607 to the end of the 17th century. This period is characterized by the growth of the colonies and the development of a distinct American identity. The colonies were established by English, French, and Dutch settlers, and they developed a distinct American identity that was based on the principles of self-government and individualism.

The period of the first settlements was a period of great growth and development for the colonies. The colonies were established by English, French, and Dutch settlers, and they developed a distinct American identity that was based on the principles of self-government and individualism.

THE PERIOD OF THE REVOLUTION

The period of the revolution is the period from the beginning of the American Revolution in 1775 to the end of the war in 1783. This period is characterized by the struggle for independence from British rule and the establishment of the United States as a new nation.

THE PERIOD OF THE CONSTITUTION

The period of the constitution is the period from the signing of the Constitution in 1787 to the present. This period is characterized by the development of the federal government and the establishment of the United States as a new nation.

THE PERIOD OF THE CIVIL WAR

The period of the civil war is the period from the beginning of the American Civil War in 1861 to the end of the war in 1865. This period is characterized by the struggle for the abolition of slavery and the preservation of the Union.

B E A N

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Alabama W. E. Hinds (March 16). "The Mexican bean beetle appears to be active already to some extent. In fact, it has been active during every month since first discovered in Alabama in 1920. There has been no complete dormancy even in midwinter. A very heavy attack of this insect also seems to be in progress. Bean raisers in the territory where the beetle did extensive damage in 1921 are, apparently, reducing their planting to between 10 and 20 per cent of what they had planted previously. The damage to the 1921 crop of snap beans, shell beans, and lima beans in the most heavily infested area was approximately 80 per cent of a normal crop."

New Mexico R. L. Middlebrook (March 22). "The Mexican bean beetle appeared in the Mesilla Valley on March 16."

P E A S

PEA APHIS (Illinoia pisi Kalt.)

Louisiana T. H. Jones (March 1). "Mr. O. G. Price, County Agent of Saint Tammany Parish, complains of damage to peas by aphids in his Parish. No specimens accompanied the complaint."

W A T E R M E L O N

COTTON APHIS (Aphis gossypii Glov.)

Florida J. R. Watson (March 18). "These insects are just making their appearance in the Ft. Myers district of Lee County."

C U C U M B E R

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

New Mexico R. L. Middlebrook (March 15). "The striped cucumber beetle put in its first appearance here today."

C E L E R Y

COTTON RED SPIDER (Tetranychus telarius L.)

Florida J. R. Watson (March 20). "This insect is doing serious damage to several celery plantings in the vicinity of Sanford in Seminole County."

SUGAR BEET

BEET ROOT-APHIS (Pemphigus balsamiferae Williams)

Nebraska M. H. Swenk (November 18, 1921). "Up to the time of heavy frosts the sugar-beet louse was doing considerable damage to the sugar beets in Scottsbluff County."

LETTUCE

MYRIAPODS (Geophilidae)

Alabama W. E. Hinds (March 18). "Centipedes attacking roots of lettuce were received from Celina."

LETTUCE LEAFHOPPER (Species not known)

New Mexico R. L. Middlebrock (March 2). "The lettuce leafhopper appeared here for the first time this season today."

PEPPERS

GREEN PEACH APHIS (Myzus persicae Sulz.)

Florida J. R. Watson (March 20). "This insect was noticed doing considerable damage in several commercial plantings of peppers in the Ft. Myers district in Lee County."

S O U T H E R N F I E L D C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

Alabama W. E. Hinds (March 16). "The winter of 1921-22 has been exceedingly short and favorable for a very high percentage of boll weevil survival in hibernation. Killing frosts occurred unusually late in the fall of 1921 and in many localities cotton was green and weevils were breeding therein until the end of December. This shortened the usual hibernating period by nearly two months. Recent examinations indicate that the percentage of living weevils in the field at this time runs exceptionally high, 16 percent being found in some cases. This is about five times the normal average survival and indicates that we shall have a very early emergence from hibernation, and exceptionally heavy attack upon the young cotton plants. If normal rainfall occurs through June and July we anticipate exceptional weevil damage to the 1922 cotton crop."

SUGAR CANE

CANE LACEWING (Leptodictya tabida H. Schaefer.)

Mexico R. H. Van Zwaluwenburg (January 14). "The cane lacewing insect has been very abundant since October on corn and on old sugar-cane plants. It is also abundant just now on the common bamboo."



F O R E S T A N D S H A D E - T R E E I N S E C T S

GENERAL FEEDERS

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

Nebraska M. H. Swenk (March 15). "The leafless condition of the trees has caused inquiries regarding the scale-insect infestations which are now exposed and comparatively conspicuous. Such inquiries are related chiefly to the oyster-shell scale."

TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

Illinois C. C. Compton (March, 1922). "From the number of egg masses it is evident that the tussock moth will be numerous this year in Humboldt Park and also Oak Park, Chicago. The temperature has been above the normal, and but few egg masses show parasitism."

BORERS

Nebraska M. H. Swenk (March 15). "Reports indicate that the various shade-tree borers are resuming activity. Reports of this sort have been received since March 9."

MAPLE

MAPLE SESIAN (Sesia acerni Clem.)

Ohio H. A. Gossard (March 18). "Maple sesian was received from Hicksville in Defiance County."

FLAT-HEADED APPLE-TREE BORER (Chrysobothris femorata Oliv.)

Illinois M. D. Leonard (November 26, 1921). "I have just received specimens of the flat-headed apple-tree borer from Danville. The nurseryman who sent them in stated that they were very injurious to newly planted hard and Norway maples."

ELM

WOOLLY ELM APHIS (Eriosoma americana Riley)

Ohio H. A. Gossard (March 18). "This insect was received about a half dozen times and about twice as many inquiries evidently referring to this pest came in during the winter."

AMERICAN ELM SCALE (Chionaspis americana Johns.)

Nebraska M. H. Swenk (March 15). "The leafless condition of the trees has caused inquiries regarding the scale-insect infestations which are now exposed and comparatively conspicuous."



ASH

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York C. R. Crosby (January 10). "Trees are badly infested in hedge rows at Barton."

BIRCH

BRONZE BIRCH BORER (Agrilus anxius Gory)

Ohio H. A. Gossard (March 18). "The bronze birch borer was reported from Akron."

HICKORY

HICKORY BARKBEETLE (Scolytus quadrispinosus Say)

New York E. P. Felt (March 23). "Mr. Henry Bird reports that this insect has practically disappeared from the Westchester County areas where it was so abundant some years ago."

PINE

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

New York E. P. Felt (March 23). "Mr. R. E. Horsey reports that the pine leaf scale occurs throughout the Pinetum of the park area of Rochester, though not so evident as last season due to successful spraying in June, 1921."

LARCH

LARCH CASE-BEARER (Coleophora laricella Hubn.)

New York W. T. M. Forbes (November 19, 1921). "The hibernating cases are more scarce about Ithaca as compared with normal years."



GREENHOUSE AND ORNAMENTAL PLANTS

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Dianthronomyia hyoscyae F. Loew)

- Massachusetts C. R. Crosby (November 8, 1921). "Badly infested plants were observed at Winchester."
- New York C. R. Crosby (March 23). "Mr. J. J. deVyver reports that the chrysanthemum midge has become established in some greenhouses at Greenvale."
- Maryland E. N. Cory (November 26, 1921). "Examinations of a large number of greenhouses in Baltimore reveals a greater degree of injury than was anticipated, the damage running from 10 to 50 per cent of the flower crop. This injury takes no account whatever of the effect on the stock plants; infested greenhouses were observed at College Park, Govanstown, Branchville, Mt. Washington, and Baltimore."

CABBAGE LOOPER (Autographa brassicae Riley)

- Indiana H. F. Dietz (November 3, 1921). "The cabbage looper did its greatest damage to chrysanthemum foliage. However, chrysanthemums at this time of the year usually have an abundance of foliage, so they can spare some. On this account the insect's damage was not nearly as great as that of the earworm because the loopers rarely ate the buds. On the other hand, when the caterpillar ate the foliage near the top of the plant it ruined the flowers for show or sale purposes."

COTTON RED SPIDER (Tetranychus telarius L.)

- New York C. R. Crosby (November 12). "Plants badly infested with this insect were observed in greenhouses at Manhasset."

FERNS

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

- New York C. R. Crosby (November 4, 1921). "Reports of this insect damaging ferns from Prince Bay."
- C. R. Crosby (December 6, 1921). "Reports of this insect damaging ferns at Fredonia."

CARNATIONS

COTTON CUTWORM (Prodenia ornithogalli Guen.)

- Indiana H. F. Dietz (November 3, 1921). "The yellow striped armyworm did its

greatest damage to carnations. In one case the plants were almost mowed down by it, but taken as a whole this pest was not as abundant in greenhouses as the looper or the corn earworm, and its damage was less than that of either of these pests."

CYCLAMEN

CYCLAMEN MITE (Tarsonemus pallidus Banks)

Maryland E. N. Cory (January 18, 1922). "Mr. C. C. Hamilton reports that 60 per cent of the plants failed to make satisfactory blooms and could not be sold from three greenhouses infested in the Baltimore district."

Alabama W. E. Hinds. "Cyclamen mites were received from Springfield."

CYCLAMEN WEEVIL (Brachyrhinus sulcatus Fab.)

Maryland E. N. Cory (January 17, 1922). "Mr. C. C. Hamilton reports that this insect is present in very small numbers in Baltimore greenhouses, the infestation being less than 1 per cent."

RHODODENDRON

RHODODENDRON TINGIS (Stephanitis rhododendri Horv.)

New York C. R. Crosby (February 25). "Infested leaves received from Cold Spring Harbor."

ROSE

STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

Massachusetts C. A. Weigel (March, 1921). "This insect has been reported as very destructive in a rose house at Wakefield."

Pennsylvania C. F. Doucette (March 21, 1922). "Beetles are beginning to show up actively, but not as numerous as last year in the Philadelphia district, where they are attacking roses under glass. Scattered beetles were observed feeding and the first egg masses were found on March 20."

ROSE LEAF TYER (Cacoecia rosaceana Harr.)

Illinois C. C. Compton (March 1922). "This insect has been reported during the winter of 1921-22 as more abundant than usual. From 10 to 20 per cent of the roses are estimated as being damaged by this pest."

SNAPDRAGON

CYCLAMEN MITE (Tarsonemus pallidus Banks)

ennsylv- C. A. Weigel. "This insect is reported as serious in several greenhouses
vania in the Philadelphia district where it is attacking snapdragon."

SUNFLOWER

SUNFLOWER PEACOCK FLY (Straussia longipennis Wied.)

ontana A. L. Strand. "This insect was reported in Volume 1, No. 7, page 269,
under date of September 6, 1921, as infesting the stems of cultivated
sunflowers. At that time the species had not been identified. Exami-
nations of several hundred plants showed that 80 per cent were infested."

POINSETTIA

TERMITES (Reticulitermes flavipes Kol.)

ew York C. R. Crosby (November 2, 1921). "This insect has been found doing
considerable damage in Brooklyn greenhouses."

EUONYMUS

EUONYMUS SCALE (Chionaspis eucynmi Comst.)

orth M. D. Leonard (March 10). "On February 20 I received a cutting from
arolina a euonymus bush which was badly infested with this scale. This was
from Greensboro."

ORNAMENTAL ASPARAGUS

HYACINTH MITE (Rhizoglyphus hyacinthi Boisd.)

ennsylv- C. F. Doucette (March 10). "Asparagus plumosus in a greenhouse at Mal-
vania vern was completely infested by this mite which occasioned a loss of 66
per cent of the crop."

SMILAX

HYACINTH MITE (Rhizoglyphus hyacinthi Boisd.)

ennsylv- C. F. Doucette (March 10). "In the Melvern district three crops of
vania smilax are harvested each season; the November crop was entirely de-
stroyed by this mite this season and the February crop was only 75 per
cent normal."

CAMELLIA

TEA SCALE (Fiorinia theae Green)

Louisiana T. H. Jones (March 15). "There has been considerable complaint of injury



to camellias by the scale insect this past winter and this spring. Letters regarding injury were received from Opelousas December 21 and January 4, LeCompte January 24, and Wilson February 21. There have been several complaints from Baton Rouge and vicinity. The tea scale appears to be the most common species present, though Lepidosaphes newsteadi Sulc., Parlatoria proteus Curtis, and Pseudaonidia paeonia Ckll. also attacked this ornamental shrub."

INSECTS AFFECTING MAN AND DOMESTIC
ANIMALS.

MAN

MOSQUITOES (*Culicidae*)

New York E. P. Felt (March 23). "Mosquitoes became somewhat active at Bainbridge about March 18."

DOMESTIC ANIMALS

OX WARBLE (*Hypoderma lineatum* DeV.)

West Virginia L. N. Peairs (March 17). "Rather severe infestation of cattle by this insect was observed at Morgantown, 10 to 15 of the parasites being found in each animal."

BITING CATTLE LOUSE (*Trichodectes scalaris* Nitzsch)

Ohio H. A. Gossard (March 18). "This insect was received from Cuyahoga Falls during February where it was infesting live stock."

HOUSEHOLD INSECTS

TERMITE (*Reticulitermes tibialis* Banks)

Nebraska M. H. Swenk (November 18, 1921). "A case of the virtual destruction of a building at Holdrege, Phelps County, by our small native termite came to our attention during late October."

SILVERFISH (*Lepisma saccharina* L.)

New York C. R. Crosby (January 26). "Reports of the serious infestation of offices by this insect were received from New York City."

ST O R E D P R O D U C T I N S E C T S

GRAIN

GRANARY WEEVIL (Calendra granaria L.)

New York H. S. Doane (November 1, 1921). "This insect is causing much injury to stored wheat at Romulus and Seneca Falls, in Seneca County."

Nebraska M. H. Swenk (November 18, 1921). "In northern Nebraska, especially Cedar County, heavy injuries to stored oats by the granary weevil were evident."

RICE WEEVIL (Calendra oryza L.)

Ohio H. A. Gossard (March 18). "The rice weevil was reported as destructive from Medina."

South Carolina A. E. Conradi (November 1, 1921). "Reports from the county agents indicate that this insect is very seriously injurious to stored corn in Laurens, Lexington, Lancaster, Clarendon, Saluda, Marion, Fairfield, and Chester Counties, the damage appearing even more serious than usual."

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus (Silvanus)surinamensis L.)

Iowa C. N. Ainslie (November 3, 1921). "Elevator men and grain buyers in northwestern Iowa, eastern Nebraska, and eastern Nebraska South Dakota are complaining of serious damage from 'bran bugs' and grain weevils in stored grain. I understand that oats have suffered the most, the kernel being eaten out leaving the hulls empty. It is supposed that the unusually mild winter of 1920-21 is responsible for the multiplying of these pests. Investigation of these reports indicates that most of the injury is being done by the saw-toothed grain beetle, which appears to have multiplied throughout the Northwest. This species has also been very annoying by its inroads on household food supplies. Calendra granaria and C. oryza are present in limited numbers while Psocids are especially numerous in the oats. While the injury caused by these pests is rather small, terminal elevator men are docking the farmers from 3 cents to 13 cents a bushel which is probably out of proportion to the real injury."

Nebraska M. H. Swenk (November 18, 1921). "In northwestern Nebraska, especially in Cedar County, heavy injury to stored oats by the saw-toothed grain beetle was evident."



Nebraska (March 15). "Since March 5 reports of stored grain pests in wheat and other grains in the farmer's bins have again started to come in, indicating a resumption of activity by these insects."

Ohio H. A. Gossard (March 18). "The saw-toothed grain beetle was received from Akron and Curtice."

INDIAN MEAL MOTH (Plodia interpunctella Hubn.)

Ohio H. A. Gossard (March 18). "This insect was sent in, as doing damage, from Springfield."

Nebraska M. H. Swenk (March 18). "Stored grain in bins was, in some instances, found infested with the Indian meal moth."

MEAL SNOUT-MOTH (Pyralis farinalis L.)

New York C. R. Crosby (November 30, 1921). "This insect was reported as destroying bulbs in storage on Staten Island, the bulbs being tulip and hyacinth."

EUROPEAN GRAIN MOTH (Tinea granella L.)

Connecticut M. P. Zappe (March 24). "Many larvae, pupae, and adults present in a large seed warehouse at Milford. Most of the injury is on corn stored in the warehouse since 1920."

FOREIGN GRAIN BEETLE (Cathartus advena Waltl.)

Nebraska M. H. Swenk (November 18, 1921). "In northeastern Nebraska, especially in Cedar County, injury to stored grain was noted by the foreign grain beetle."

YELLOW MEALWORM (Tenebrio molitor L.)

New York C. R. Crosby (November 30, 1921). "This beetle was found among tulip and hyacinth bulbs on Staten Island."

Ohio H. A. Gossard (March 18). "This insect was sent in from Akron."

CADELLE (Tenebroides mauritanicus L.)

Nebraska M. H. Swenk (November 18, 1921). "The injury to stored wheat in bins of farmers in eastern Nebraska by the cadelle insect, the extent of which I described last month as almost unprecedented in this State, continued with but gradual abatement until early in November, since which time reports of injuries have been much fewer."

CONFUSED FLOUR BEETLE (Tribolium confusum Luv.)

Ohio H. A. Gossard (March 18). "Confused flour beetle was sent in from New Philadelphia."



TOBACCO PRODUCTS

CIGARETTE BEETLE (Lasioderma serricorne Fab.)

New York C. R. Crosby (December 20, 1921). "Received cigars completely destroyed by this insect from New York City."

BEANS

BEAN WEEVIL (Mylabris cinctus Say.)

New York C. R. Crosby. "During the months of November, December, and January numerous reports were received from all parts of the State of serious injury to beans by this insect. Specimens were sent in from Delmar, Depew, Copenhagen, Hammondsport, Schenectady, Elmira, Lake George, Cincinnatus, North Franklin, Ossining, Adams, Seneca, and Waterloo. At last place about 20 per cent of a stock of 50 bushels of beans were destroyed."

Ohio H. A. Gossard (March 18). "Bean weevil was received from six or eight different points in the State."

THE UNIVERSITY OF CHICAGO
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THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

May 1, 1922

Number 2

BUREAU OF ENTOMOLOGY
UNITED STATES
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OUTSTANDING ENTOMOLOGICAL FEATURES FOR APRIL, 1922

The Hessian fly situation remains unchanged over the greater part of the wheat-growing sections of the country. Infestation is reported as very light in Ohio, Indiana, and Kansas. A moderate infestation is reported from Lancaster and Cass Counties, Nebr., and a rather alarming situation is reported from Madison and Warren Counties, Iowa.

Chinch bugs passed the winter with but very low mortality in Indiana, South Dakota, Illinois, and Missouri. Heavy rains in central Illinois destroyed some of the bugs. Floods in Missouri deposited large numbers of bugs over regions which had been cleaned up by burning during the fall and winter. These bugs do not seem to have suffered from the effects of the water.

The green bug, with other aphids, is reported as quite serious in parts of Tennessee. This pest is spreading westward across the State of New Mexico where it is reported as destroying approximately 20 per cent of the wheat.

The false wireworms reported in the last number of the Survey Bulletin are still seriously destroying wheat in Nebraska. A similar condition is reported this month from the western half of South Dakota.

The San Jose scale is still on the increase in the Middle Atlantic and East-Central States, being reported as serious in Rhode Island, New York, New Jersey, Indiana, Wisconsin, Missouri, and Georgia. Dormant spraying in Georgia did not appear to be effective in the control of this pest.

A new enemy of grapes was reported from Nevada as doing serious damage in all vineyards in the Las Vegas Valley by eating into the buds. Specimens which accompanied the report have been identified as the chrysomelid Glyptoscelis squamulata Crotch.

Seed-corn maggot has never been observed in such numbers as are now present in southern New Jersey.

Two rather unusual tomato pests are reported from Arizona, Trichobaris mucorea Lec. and Ulus crassus Lec.

The pea aphid is reported as seriously threatening cannery peas in parts of Delaware. The region so seriously infested last year in the Santa Clara Valley of California by this pest is only very lightly infested so far this year.

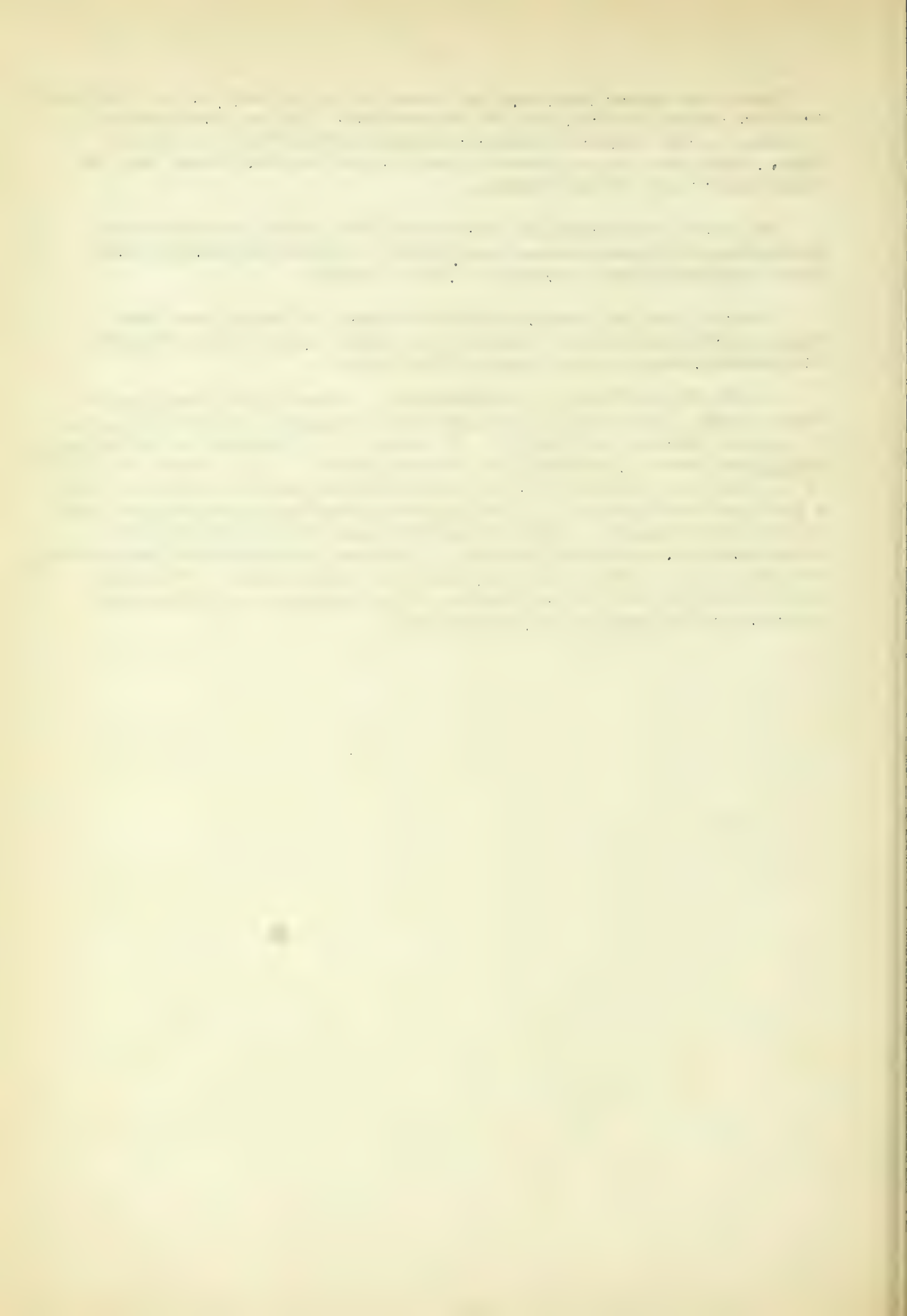


Winter and spring scouting has shown the gipsy moth to be established over the entire central part of Connecticut. The new territory is as large as all known infested territory in this State up to this time. This pest is now about as near to the New York State line in Connecticut as it is in Vermont.

The worst infestation of screw-worm flies since the Bureau of Entomology field station was established at Uvalde in southwestern Texas appeared there about the middle of April.

Cattle from the scab-infested territory in Nevada have been shipped into California. Measures are being undertaken to prevent the establishment of this pest in California.

A NEW POTATO WEEVIL IN MISSISSIPPI: A weevil has been found in Stone County, Mississippi, in considerable numbers, which is injurious to potato, tomato, and turnip. It seems to be identical with Desiantha nociua Lea known in Australia as tomato weevil. It is about one-third of an inch long, though dull gray in color and bears on the wing covers a pale gray v-shaped mark. It has been known in Australia since 1908 and does much damage. The larvae feed upon the plants at night, hiding underground during the day. Southern entomologists, especially, are requested to keep a sharp lookout for this species. Professor Harned will try to find out how far it has spread and the Bureau of Entomology will help as far as possible.



CEREAL AND FORAGE - CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

- Pennsylvania P. R. Myers (April 10). "Mr. Smith found two eggs of Hessian fly on this date, this being the earliest record of the spring brood of the fly at Carlisle. This is four days later than was the case during 1921."
- Ohio T. H. Parks (April). "Adults of the spring brood emerged in out-of-door cages in April. The brood is very light in all parts of the State, due to very little early sowed winter wheat."
- H. A. Gossard (April 27). "An examination made for Hessian fly eggs at Wooster, April 11, discovered none; however, flaxseeds which Prof. T. H. Parks had obtained in Williams County were yielding flies in jars at Columbus April 14. I found a few Hessian fly eggs at Wooster today, April 27."
- Indiana J. J. Davis (April 15). "As reported last fall, sowing at the right time was almost universal in the State and consequently there is comparatively little fly infestation at present. In the early sown fields there is an abundance of the fly."
- Illinois W. B. Cartwright (April 12). "First pupation March 19; first adults observed April 4. Only small part of brood has emerged to date. Oviposition scattered due to the rankness of growth of wheat. Records from Centralia."
- W. P. Flint (April 18). "No eggs could be found on plants at Urbana on April 16."
- Nebraska M. H. Swenk (April 15). "The situation is virtually unchanged since my last report. Examinations of wheat fields in the vicinity of Lincoln early in April revealed moderate infestation in northeastern Lancaster and western Cass Counties."



- Iowa F. D. Butcher (April 18). "The Hessian fly is showing up in alarming numbers in Madison and Warren Counties this spring. Union County had very little fly infestation on the 15th. Very little wheat was sown in this county until after the September rains (September 22)."
- Kansas J. W. McColloch (March 23). "Infestation in this State is very light. There is an area of rather heavy infestation in Wabaunsee County and reports of injury have been received from Coage and Coffey Counties. In all cases infestation is confined largely to volunteer wheat and very early sown wheat."
- Missouri R. A. Blanchard (April 2). "First eggs found on this date. Last year the earliest date that eggs were found at Webster Groves was April 5. Wet snow occurred this year on March 31."

CHINCH BUG (Blissus leucopterus Say)

- Indiana J. J. Davis (April 15). "The chinch bug seems to have wintered over safely and there are indications that the bugs will be more abundant and more widespread than last year."
- Illinois W. P. Flint (April 9). "No general flight from hibernation as yet. Bugs mating on this date, moderate numbers killed by the heavy rains in central part of this State."
- Missouri A. C. Burrill (April 4). "First flight of chinch bugs observed east of Montgomery City on March 25. Spring freshets have washed million of chinch bugs and deposited them along the edge of cornfields where very thorough burning had been carried on. The bugs have not been killed except where deeply buried. Winter has been unfavorable for satisfactory burning."
- (April 21). "Slight flying going on today in Livingston County."
- South Dakota H. C. Severin (April 28). "These insects are still in hibernating quarters but have passed the winter in excellent shape. The pest will do considerable harm if weather conditions remain favorable."

GREEN BUG (Toxoptera graminum Rond.)

- Tennessee G. G. Ainslie (April 17). "Considerable evidence of damage during the past two or three weeks by various grain aphids, especially Rhopalosiphum prunifoliae, Macrosiphum graminum, Toxoptera graminum, and, apparently to somewhat lesser extent, Aphis maidis. One barley field which three weeks ago was in good condition is now considered an absolute failure; however, one or two heavy rains and predacious enemies have about terminated the outbreak."



Kansas S. J. Hunter. "Survey carried on during January and February by Mr. R. A. Beamer over the eastern third of the State shows that the green bug was present though not seriously injurious in Allen, Neosho, Montgomery, Bourbon, Linn, and Miami Counties. Much worse than last year in Cherokee County and by far worse in Labette County than in any other county in the State."

New Mexico R. Middlebrook (April 7). "This pest is much more serious in alfalfa and wheat than usual. It is spreading westward across the State and I estimate that 20 per cent of the infested wheat is damaged."

WHEAT STRAW-WORM (Harmolita grandis minuta How.)

Virginia F. M. Poos (March 25). "First emerging observed on this date at Charlottesville."

Illinois W. P. Cartwright (April 1). "First emerging of the season observed on this date at Centralia."

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (April 15). "Most serious losses to wheat during the period covered by this report (March 15-April 15) have been due to this insect, which was reported as seriously injurious in western part of Nebraska last fall. This spring immature larvae have resumed feeding and have injured or destroyed numerous fields of wheat. The injury began to be noticed during the last 10 days in March near Chappell in Deuel County. One field of 150 acres was almost completely destroyed by having the roots eaten away and another field of 200 acres in the same general locality that was badly injured last fall was completely destroyed this spring. As late as April 10 the worms were still at work according to reports from Big Springs in Deuel County."

South Dakota H. C. Severin (April 25). "We expect considerable damage in the western half of South Dakota from this insect this spring."

WHEAT WIREWORM (Agriotes mancus Say)

Missouri A. C. Burrill (April 21). "Doing serious damage at Chillicothe and Mooresville where 10 per cent of the straws have been gnawed off."



CORN

CORN EARWORM (Heliothis obsoleta Fab.)

Louisiana T. H. Jones (April 10). "Mr. W. G. Bradley reports that a few larvae, the largest about three-quarters of an inch long, were observed in buds of young corn plants at Baton Rouge."

(April 13). "A few larvae, the largest nearly one inch long, were observed working on corn at Napoleonville."

ARMY WORM (Cirphis univincta Haw.)

Illinois L. C. Chandler (March 23). "First moth caught in light trap at Carbondale on this date."

Missouri, L. Haseman (April 24). "Mr. B. E. Miller, county agent of Cass County, reports that on this date moths were visiting flower blossoms in numbers."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata L.)

Louisiana T. H. Jones (April 17). "Judging from observations and reports, larvae have not caused much damage to young corn in Louisiana so far this year. A very few larvae nearly full grown were taken at Baton Rouge on April 8 and at Napoleonville on April 13."

WHITE GRUBS (Phyllonhaga spp.)

Indiana J. J. Davis (April 15). "Continued reports of injury last fall show the rather general distribution of the 1920 brood in the State and the greater abundance of this insect than for many years."

Louisiana T. H. Jones (April 15). "There has been some complaint in this section recently of injury by the beetles to foliage, especially of oak, pecan, and rose."

WESTERN FLEA-BEETLE (Phyllotreta pusilla Horn)

Arizona Don C. Mote (March 21). "Doing sufficient damage to small patch of early corn in Salt River Valley to cause the owner to ask for help."



CORN LEAF APHIS (Aphis maidis Fitch)

Tennessee G. G. Ainslie (April 17). "I have followed this insect for several years through the winter here in the throats of barley shoots, but have never seen it so abundant and vigorous so early as it is this year. Migrators are being produced in large numbers but so far I have found no other host than barley for this migrating generation."

ALFALFA

CLAY-BACKED CUTWORM (Feltia gladiaria Morr.)

Nebraska M. H. Swenk (April 15). "Cutworms began working in alfalfa fields of the Platte Valley from Hall County westward about March 28, but up to date have not done much serious injury, though in some fields the new growth has been kept down as it appeared."

WESTERN ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

Nebraska M. H. Swenk (April 15). "About April 12, the alfalfa fields in Scottsbluff County showed infestation with the western army cutworm."

DINGY CUTWORM (Feltia subgothica Haw.)

Nebraska M. H. Swenk (April 15). "This cutworm has also begun working in the alfalfa fields of the Platte Valley, where they have in some places kept the new growth down."

PEA APHIS (Illinoia pisi Kalt.)

New Mexico R. Middlebrook (April 2). "Sent in as attacking alfalfa and wheat, by the county agent from Chaves and Eddy Counties."

CLOVER

WESTERN 12-SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

Oregon A. L. Lovett (March 29). "Grower near Rickreall reported clover field of 20 acres sown in February practically cleaned out through the serious attack of this beetle in 2 days time."

GARDEN SLUGS (Agriolimax agrestis L.)

Oregon A. L. Lovett (April 15). "Serious injury to field crops of clover, rye, and oats occurred in late fall and early winter. Fields near Dayton being so completely destroyed as to require replanting, and in some cases the succeeding crop was likewise seriously attacked. Vetch in the Station variety plats was heavily attacked. The combination of late winter snows and low temperature has noticeably checked this pest."

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

Ohio T. H. Parks (April). "Larvae much less abundant than last year. Only one complaint of serious damage. Alfalfa much less affected than red clover."

H. A. Gossard (April 27). "The clover leaf weevil was received from Caledonia, April 24, and was observed to have done much damage about Chillicothe during the first three weeks of April, but has been attacked by Empusa and is now much reduced in numbers."

Illinois S. C. Chandler (April 10). "Considerable numbers in all fields in Wabash County, one area being defoliated."

Missouri L. Haseman (April 19). "This insect is worse than usual, especially in central Missouri. Continuous rain has assisted the disease in checking this pest in Jackson County; one sample was 100 per cent diseased. Mr. A. C. Burrill also noticed this disease on clover-leaf weevil in Shelby County."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Ohio T. H. Parks. "Beetles were flying to clover fields during the first two weeks in April. Hibernation took place in the largest numbers in the fallen leaves of woodlots. Damage to clover will probably appear by late May."

COW PEAS

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Georgia O. I. Snapp (April 13). "Many of these weevils have been observed in wounds, crotches, etc., of peach trees in orchards planted last year to cowpeas in the Fort Valley Section."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Louisiana T. H. Jones (April 6). "Mr. C. E. Smith reports the first adults of the season observed on this date at Baton Rouge."

FRUIT INSECTS

APPLE

GREEN APPLE APHIS (Aphis pomi DeG.)

- Massachusetts H. T. Fernald (April 25). "Green aphids on apple were reported as unusually abundant in the eastern part of the State; some of them there had hatched on April 5, yet the buds which had swollen had not commenced to break. In the northern part of Essex County they had hatched by April 11; in the Connecticut Valley they were hatching on the 9th and 10th, and in Berkshire County some at least had hatched by April 18; in the western part of the State they did not appear to be as numerous as in the eastern part. Cool weather, with standing water frozen over, came on the night of April 20, but does not appear to have been sufficiently severe to have affected the aphids."
- New York C. R. Crosby and assistants. "This insect was first observed on April 10 in Orleans County; by April 15th it was observed as common throughout the county but abundant in only two orchards. It is, apparently, not so prevalent in Orange County but is very abundant in the University orchard at Ithaca."
- E. P. Felt (April 24). "Observed on April 16 in small numbers at Nassau in Rensselaer County."
- New Jersey M. D. Leonard (April 9). "Stem mothers present in small numbers on opening buds at Pompton."
- Ohio Herbert Osborn (April 18). "Have appeared in numbers at Columbus and ~~are~~ accompanied by coccinellids & syrphids."
- Oregon A. L. Lovett (April 15). "The season has been backward, cold, and rainy. Eggs began hatching near Corvallis on April 12. This species began hatching on March 22 in 1921 and on March 29 in 1920."

APPLE-GRAIN APHIS (Rhopalosiphum funifoliae Fitch)

- New York C. R. Crosby and assistants. "This insect is reported as fairly abundant in Chautauqua, Ulster, Monroe, Onondaga, and Dutchess Counties. The first aphids were found on apple buds in Columbia County on April 9. Cold weather and rains have reduced the numbers of this pest ~~not~~ considerably about Ithaca."

L. F. Strickland (April 4). "First observed on this date at Lockport."

P. J. Parrot (April 13). "First observed on this date at Geneva."

New Jersey M. D. Leonard (April 9). "Stem mothers cut on opening buds in small orchards at Pompton."

Ohio H. A. Gossard (April 27). "This insect appeared quite numerous in many orchards well scattered over the State. I noted a good many at Chillicothe April 5 when the bloom had just reached the pink stage. In central Ohio they were sufficiently numerous in an orchard at Westerville so that nicotine sulphate was added to the spray. Syrphus-fly larvae appearing numerous about the middle of April were a check to aphid multiplication."

Indiana J. J. Davis (April 15). "Has been unusually abundant this year. Numerous reports and specimens have been received from all parts of the State, beginning in the southern end of the State two or three weeks ago and continuing up to the present time, the last reports coming from the northern end of the State."

Iowa F. D. Butcher (April 18). "Has appeared in large numbers on opening buds. A few cases show the buds already starting to turn brown. Efforts are being made to get orchardists to spray for this pest."

Missouri L. Haseman (March 25). "Seems to be widely distributed over the entire State. Since coming to Missouri I have never seen the winter eggs of this aphid as abundant as they are this winter. From here south the eggs are hatching and some fruit growers from the southern part of the State report the young lice as completely encrusting the expanding buds. They have been hatching at Columbia for the past week and some of the trees are also very heavily infested."

(April 19). "This insect seems to be coming under the control of its natural enemies. They have not yet started to migrate in central Missouri. Apples are in bloom at the present time and we expect migration soon."

ROSY APPLE APHIS (Anuraphis roseus Baker)

- New York C. R. Crosby and assistants (April 18). "Small numbers of these aphids were observed during the past week at Ithaca and Morton."
- Pennsylvania S. W. Frost (April 15). "Very little infestation by rosy apple aphid in this part of the State this year."
- New Jersey M. D. Leonard (April 9). "A few stem mothers observed on opening buds at Pompton."
- Maryland E. N. Cory (April 14). "Rosy apple aphids were much more numerous than usual in the Hagerstown region. Rainy weather interfered with spraying and lime-sulphur was applied too late to have much effect."
- Oregon A. L. Lovett (April 15). "Newly hatched nymphs appeared in orchards near Corvallis on March 30. Nymphs appeared on March 9 in 1921 and on March 19 in 1920."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

- New York C. R. Crosby and assistants. "This insect is reported as serious on young Wealthy trees in an orchard in Orleans County. Infested material has also been observed at Larchmont and in Ulster County."

CODLING MOTH (Carpocapsa pomonella L.)

- Illinois W. P. Flint (April 18). "About 50 per cent of the overwintering brood on trees in orchards had pupated by April 14. Apple blooms just opening today. Peach in full bloom."
- Missouri L. Haseman (April 19). "This insect seems to be less numerous than usual. We believe this to be due to the short crop of last year. Overwintering larvae are pupating here in breeding cases but no moths have, apparently, emerged to date."

CIGAR CASE-BEARER (Coleophora fletcherella Fem.)

- New York C. R. Crosby and assistants. "This insect is being observed in neglected orchards in small numbers in Ulster, Columbia, and Orleans Counties."
- Missouri A. C. Burrill (March 18). "Never have been in a State where this pest is so common. Most of the larvae have passed the winter successfully."

BUD MOTH (Imetocera ocellana D. S.)

- Connecticut D. A. Porter (April 11). "First larvae observed entering a bud on this date at Wallingford."

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(April 22). "Emergence from hibernation has been very slow, due to cold weather. On this date by actual count not over 25 per cent of the larvae have left winter quarters."

New York C. R. Crosby and assistants reported this insect as abundant in Columbia County and observed in small numbers in Ulster and Orleans Counties.

Pennsylvania S. W. Frost (April 15). "The bud moth seems to be abundant this year."

Oregon A. L. Lovett (April 10). "The first larvae were observed feeding and active on this date at Corvallis."

LESSERBUD MOTH (Recurvaria nanella Huebn.)

Connecticut D. A. Porter (April 10). "Numerous moths have left winter quarters and are entering apple buds which are now showing one-fourth to one-half inch of green at Wallingford."

RED-BANDED LEAF-ROLLER (Fulia velutinana Walk.)

Pennsylvania E. W. Frost (April 15). "Adults issued from their hibernating quarters on April 13 in Adams County. Up to this date no eggs have been laid."

TENT CATERPILLAR (Malacosoma americana Fab.)

Massachusetts H. T. Fernald (April 15). "Tent caterpillar egg masses are very abundant in the eastern part of the State, and more so in the western part than was the case last year. At Amherst, eggs were hatching from the 12th to the 14th of April; in Plymouth County they were hatching on the 5th; in Bristol County on the 7th; and in Essex County, near Haverhill, on the 11th."

Rhode Island A. E. Stone (April 25). "I have found large numbers of the tent caterpillars hatching, and we are apparently going to have them in unusual abundance."

Connecticut D. A. Porter (April 8). "Eggs of this species are commencing to hatch at Wallingford."

New York E. P. Felt (April 24). "Mr. L. W. Jones reports that eggs and nests are common at Bainbridge."

Delaware C. O. Houghton (April 18). "Eggs were hatching here on March 29. Nests of this species appear to be more numerous than usual this year about Newark."

Oregon A. L. Lovett (April 14). "The northwestern tent caterpillar, Malacosoma alvialis Dyar, seems to be more common than usual this year about Corvallis. First eggs were observed hatching on this date."

CANKERWORMS (Paleacrita vernata Peck and
Alsophila pometonii Harris)

New York G. E. Smith (March 14). "Moths of the spring cankerworm are ascending the trunks of trees in considerable numbers."

Ohio H. A. Gossard (April 27). "Cankerworm eggs received from Cleveland were hatching April 24."

Wisconsin E. L. Chambers (April 6). "Female moths of the spring cankerworm have been seen on trees since March 30. Egg laying has not yet been observed at Whitewater. Full cankerworm eggs were laid in large numbers in November. These have not yet begun to hatch."

BUFFALO TREE-HOPPER (Ceresa bubalis Fab.)

New York J. B. Palmer (April 15). "Young peach trees were injured considerably by the egg punctures of this insect at Owego. We also noticed considerable damage to young apple trees in Onondaga and Chautauqua Counties."

Indiana J. J. Davis (April 15). "Numerous twigs showing injury by this insect have been sent in, particularly from the northern part of the State."

Nebraska M. H. Swenk (April 15). "Because of the leafless condition of the trees, we have received inquiries concerning the work of this insect which seems to have been prevalent in the orchards last season."

Missouri A. C. Burrill. "Very heavy infestation must have occurred last year in Cape Girardeau County where practically all of the young trees had hundreds of egg scars."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Rhode Island A. E. Stene (April 25). "The San Jose scale is showing up in larger numbers than at any time during the past three or four years."

- New York C. R. Crosby and assistants reported this insect as occurring quite generally over Wayne County.'
- Maryland E. N. Cory (March 16). "This insect seems to be on the upward swing of a cycle of increase, from observations made at Preston, Easton, Denton, Berlin, Snow Hill, and Princess Anne."
(March 24). "This increase seems to be due to the great reduction of natural enemies following the almost total absence of this scale for a period of years."
- Ohio H. A. Gossard (April 27). "During late March and April the San Jose scale was received from many points throughout the State."
- Indiana J. J. Davis (April 15). "As in neighboring States, the San Jose scale has increased in Indiana and is now doing a great amount of injury. Counts in Indiana show a low comparative mortality similar to that reported by Chandler in Illinois in the last number of this Bulletin."
- Illinois S. C. Chandler (April 13). "Very little burning of leaves in plats sprayed with dormant sprays when leaves were one-half inch long. Oils were little or no worse than sulphur."
- Wisconsin S. B. Fracker (March 17). "Campaigns carried on at Sheboygan and Beloit in 1918-20 were, apparently, successful. An extensive control campaign is being put on this spring at Whitewater and an eradication project of this pest is under way at LaCrosse. This scale is not thriving but will survive most winters."
- Missouri L. Haseman (March 25). "The San Jose scale during the past summer and fall spread more rapidly than usual and most of the commercial-bearing orchards have trees badly encrusted. A State-wide campaign has been started in Missouri this winter, looking to the development of a more general application of dormant spraying."
(April 19). "Most encouraging reductions have been secured by the campaign started earlier in the spring. Last year was a favorable one for scale increase."

OYSTER-SHELL SCALE (Lenidosaphes ulmi L.)

- New York C. R. Crosby and assistants reported considerable infestation throughout the apple-growing sections of the State."

- Ohio H. A. Gossard (April 27). "During late March and throughout April specimens of the oyster-shell scale were received from many points throughout the State."
- Indiana J. J. Davis (April 15). "The oyster-shell scale is most abundant and destructive in the northern half of Indiana. From last year's experience we are not strongly recommending dormant spraying for the control of this pest. These observations seem to indicate that all eggs of the one-brood species hatch within a period of twelve or fourteen days. Similar observations on the hatching of this pest have been made by Mr. H. F. Dietz."
- Nebraska M. H. Swenk (April 15). "Numerous inquiries have been received concerning the oyster-shell scale during the past month."
- Wisconsin S. B. Fracker (April 16). "This insect is important enough to require control measures in the southern part of the State."

APPLE FLEA WEEVIL (Orchestes pallicornis Say)

- Illinois S. C. Chandler (April 3). "First adult of the season observed at Olney on this date."
- (April 13). "First eggs of the season observed on this date. Many weevils on trees, mostly mating. Considerable injury on trees which are not well leaved out."
- Ohio H. A. Gossard (April 27). "The apple flea-weevil was observed to be appearing very numerous in orchards not cultivated at Delaware, Ohio, April 7 and 8. The earliest comers were noticed April 5. By April 19 the entire brood appeared to be active and had done severe damage to the buds and partly unfolded leaves."

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

- Connecticut Philip Garman (April 23). "Eggs slightly more abundant than last year in New Haven County."
- New York C. R. Crosby and assistants reported the eggs of this insect as comparatively abundant in Tompkins, Broome, Ulster, and Orleans Counties."
- Pennsylvania S. W. Frost (April 15). "This insect is noticeably serious this spring in Adams County."
- Maryland E. N. Cory (April 18). "A preliminary survey of most of the eastern shore and part of western Maryland has disclosed this mite in the following places: Denton, Easton, Skimpton, College, Branchville, Havre de Grace, Cumberland, Lonacoming, and Oldtown."

PEAR

PEAR THRIPS (Taeniothrips inconsequens Uzel)

W York C. R. Crosby and assistants reported this insect as appearing in great numbers where infestation was bad last year in Ulster County. Their first date of appearance in Columbia County was April 9. By April 15 they were abundant and inside of the buds in this County. By April 15 they were found in large numbers in Nassau County and also quite plentiful in parts of Orleans County."

PEAR PSYLLA (Psylla pyricola Foerst.)

Connecticut W. E. Britton (April 13). "Eggs very abundant on twigs on this date. Apparently they have just been laid. This insect is seemingly more abundant than usual."

W York C. R. Crosby and assistants. "Flies were appearing in Orleans County on March 12. First eggs were found in Ontario County on March 23 and in Ulster County on April 5. Flies were abundant and egg laying was progressing in Monroe County on April 5. By April 7 eggs were found in abundance in Wayne County. On April 8 adult flies were abundant in Genesee County and fairly abundant in Columbia County. Eggs were observed for the first time on April 11 at Geneva. By April 14 egg laying was progressing rapidly in Genesee County while very few eggs were observed in Onondaga County. On April 15 flies were found in large numbers in Nassau and Columbia Counties.

PEACH

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

W York J. B. Palmer (April 8). "Several young trees badly infested in Ulster County."

orgia O. I. Snapp (April 13). "The winter sprays have failed to control the San Jose scale in a number of orchards in the Georgia peach belt this year. In one large orchard that had received a thorough application of 1-8 lime-sulphur solution thousands of crawlers were noticed on this date and many practically full-grown living adults."

PEACH BORER (Aegeria exitiosa Say)

W York C. R. Crosby and assistants report that 5 acres of young peaches in Ulster County are seriously infested. Badly infested orchards were also noticed in Nassau and Monroe Counties.

orgia O. I. Snapp (April 13). "All growers exceedingly well pleased over results obtained from paradichlorobenzene. A quarter of a million pounds were used by the commercial growers in the State last fall. Results of much experience with the use of this chemical in orchards containing young trees are encouraging."

Indiana J. J. Davis (April 15). "Paradichlorobenzene is now being used by practically all peach growers of the State, as well as by a great many who only have a few trees."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata Fab.)

Georgia O. I. Snapp (April 1). "During the latter part of March and the first of April these insects were quite abundant on peach blooms often eating from the calyces and destroying the small peaches."

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia O. I. Snapp (April 13). "The curculio suppression campaign of 1921 is, without doubt, responsible for the decrease in the number of adults appearing from hibernation as compared with last season. First adults appeared March 4. First insects noted in the field April 3. First larvae noticed April 6 at insectary."

Louisiana T. H. Jones. "First evidence of injury noted on March 29. Very small larvae and young drops have been observed. Drops plentiful April 17 under the same trees and larvae nearly full grown at Baton Rouge."

RASPBERRY

RED-NECKED CANE-BORER (Agilus ruficollis Fab.)

Wisconsin S. B. Fracker (April 18). "Injurious in small fields about Madison. Distribution irregular."

ROSE SCALE (Aulacaspis rosae Bouche)

Indiana J. J. Davis (April 15). "The rose scale has been repeatedly received the past month. In all cases the host has been raspberry."

CURRENT

CURRENT APHIS (Myzus ribis L.)

New York P. J. Parrott (April 10). "Observed on the opening buds for the first time this year at Geneva."

IMPORTED CURRENT WORM (Pteronidia ribesi Scop.)

Delaware C. O. Houghton (April 16). "Observed both males and females about the bushes and found a few leaves eaten by the newly hatched larvae at Newark on this date."

GRAPE

GRAPEVINE EPIMENTS (Psychomorpha epimenis Drury)

- Delaware C. O. Houghton (April 16). "Observed this species ovipositing on grapevines. The eggs were deposited at intervals of a few seconds and were tucked away in crevices in the bark and around the bodies. The time was 2 p. m."

STRIPED TREE CRICKET (Oecanthus nigricornis Walk.)

- New York C. R. Crosby (March 9). "Infested canes were received on this date from Sanborn."
- Indiana J. J. Davis (April 15). "Eggs of this insect in grape, raspberry, and peach twigs have been sent to us frequently the past few months."

GRAPE FLEA-BEETLE (Haltica chalybea Ill.)

- Indiana J. J. Davis (April 15). "Adults were received from one correspondent at New Albany April 11 with the report that it was burning and eating grape patches."

Glyptoscelis squamulata Crotch:

- Nevada C. W. Creel (April 21). "Mr. J. H. Wittener, county agent of Clark County, reports that this insect is doing serious damage to all vineyards in Las Vegas Valley. They, apparently, do their work at night, boring small holes into the buds just before leafing out, eating out, presumably, the heart of the bud growth and spend the day hiding under the bark of the vines. This is the first report of this insect to come to the attention of the University of Nevada."

CITRUS

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

- Florida Jeff Chaffin (April 6). "Mr. Wm. Gomme reports that he has not seen this insect so bad in years as it is this year in Polk County. A similar report is sent in from Lee County by Mr. H. E. Stevens and by Mr. C. D. Kime from Orange County."

CITRUS WHITE FLY (Dialeurodes citri Ashm.)

- Florida Jeff Chaffin (April 15). "There is a great deal less infestation by the white fly this year than last, probably due to climatic conditions which favored fungous diseases."

TRUCK CROP INSECTS

POTATO AND TOMATO

POTATO BEETLE (*Leptinotarsa decemlineata* Say)

- Missouri A. C. Burrill (April 19). "The first beetle seen above ground this year was observed today south of Kansas City."
- Florida Jeff Chaffin (April 10). "Mr. James Kerr reports that this insect is more abundant than usual at Chipley in Washington County. In the northwestern part of the State on the peninsula around Hastings where thousands of bushels are grown one never sees this beetle."
- Louisiana T. H. Jones. "Mr. C. E. Smith reports that the first eggs were observed outdoors on March 18 at Baton Rouge. On April 5, the adults were numerous and eggs and young larvae were observed in the field."

SEED-CORN MAGGOT (*Hylemyia cilicrura* Rond.)

- New Jersey D. E. Fink (April 15). "This insect is now abundant throughout the southern half of the State and at Dividing Creek in the extreme southern part of the State it has never before been observed in such numbers. Although in evidence from the first of the month, they really became very abundant only within the past four or five days. They are already depositing eggs in the soil and such crops as peas, beans, and potatoes may show injury very soon."

LEAF-FOOTED PLANT-BUG (*Leptoglossus phyllonus* L.)

- Louisiana T. H. Jones (April 10). "Mr. G. L. Tiebout reports damage by the adults in Tangipahoa Parish and about Baton Rouge, the injury consisting of wilting of the terminal growth due to feeding."

SOUTHERN GREEN PLANT-BUG (*Nezara viridula* L.)

- Louisiana T. H. Jones (April 12). "C. W. Davis reports that these insects are giving a good deal of trouble in this section at Homer. They suck the top of the plants and the bud immediately wilts. These plants do not die but rarely amount to anything."

(April 5). "Adults are numerous on radish which is going to seed and are common on Irish potatoes at Baton Rouge. The wilting of terminal growth of the latter is common. Egg clusters and small nymphs were also observed on this date."

Trichobaris mucorea LeC.

- Arizona Don C. Mote (April 3). "Mr. Skinner reports that this beetle is abundant on young tomatoes, dozens feeding upon each plant in the garden at Tempe. The feeding habits are somewhat different from those of Ulus crassus. The beetles gouge furrows in the stem extending from the soil line about one-half an inch up the plant."
- April 15. "Mr. Skinner reports that all the beetles have disappeared."

Ulus crassus Lec.

Arizona Don C. Mote (March 30). "Mr. R. Bevin reports that this insect has never been noticed in his district before, though they were very abundant last July in another district. Practically all the tomato plants are girdled near the soil line in the Salt River Valley north of Phoenix. The beetles feed on the stems, which they girdle, and when the plant falls they collect in the shade and feed upon the fallen plant. Beetles were observed mating on this date."

CABBAGE

CABBAGE MAGGOT (Helomyia brassicae Pouché)

New York H. C. Odell (April 14). "First adults were observed on this date in Nassau County."

IMPORTED CABBAGE WORM (Pontia rapae L.)

Delaware C. O. Houghton (April 18). "Adults are quite numerous here now. They were first observed on April 8."

CABBAGE APHIDS (Brevicoryne brassicae L.)

New Mexico R. Middlebrook (April 7). "These insects made their appearance very late in Donna Anna County, and seem to be very few in numbers. Coccinellid beetles are quite numerous among the aphids."

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Louisiana T. H. Jones (April 4). "Mr. R. W. Axt reports that the adults are common on radishes about Baton Rouge. No other stages have been observed to date."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica duodecimpunctata Fab.)

New Mexico R. Middlebrook (April 1). "These beetles are extremely abundant this year, especially on cabbage, where they have seriously affected 50 per cent of the plants and have killed out the cabbages at Rincon, Hatch, and Garfield."

ONION THRIPS (Thrips tabaci Lind.)

Delaware C. O. Houghton (April 1). "A thrips, probably this species, has seriously injured cabbage in the University greenhouse at Newark this winter."

STRAWBERRY

STRAWBERRY HOOF-WEEVIL (Otiorhynchus rugifrons Gyll.)

Oregon S. H. VanTrump. "Twenty-two per cent of all strawberries inspected in Marion and Polk Counties are infested. The percentage of infestation does not appear so great as last year owing to the fact that the infested territory of 1921 has not been inspected this year."

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

Indiana J. J. Davis (April 15). "A number of requests for control of this insect have been received."

STRAWBERRY FLEA-BEETLE (Haltica limba Ill.)

Louisiana T. H. Jones (March 17). "Mr. P. Dread reports that they are giving the farmers no end of trouble this season at Ponchatoula."

STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

Louisiana T. H. Jones (March 4). "Mr. C. E. Smith reports that considerable damage has been noted by these insects in the field of Baton Rouge."

STRAWBERRY WEEVIL (Anthonomus signatus Say)

Maryland J. A. Hyslop (April 12). "Quite seriously cutting the buds in the southeastern part of Montgomery County, much more numerous than last year. Severe killing frosts, however, have destroyed the crop to such an extent that the amount of weevil injury can not be estimated."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Alabama and Georgia N. F. Howard (March 29). "This beetle has not as yet been observed in the field, but observations in hibernating cages indicate a very high percentage of survival. No beans are up in the field in the Birmingham district. At Thomasville, Ga., near the Florida line, a few beans are up and in one instance the beetles have been observed in the field; here also, the survival over winter is very high. Great decrease in sale of beans by city merchants in Birmingham indicates an appreciable reduction of bean acreage due to this pest."

PEAS

PEA APHIS (Illinoia pisi Kalt.)

California Roy E. Campbell (April 22). "Careful inspections of the pea fields of the Santa Clara Valley, where several thousand acres of both cannery and market peas were very severely damaged a

year ago by the pea aphid, failed to show the presence of the aphid up to April 20, except in very small numbers. Only two fields were found in which the aphid was present in sufficient numbers to indicate that any possible damage would be done this season. The peas are well in bloom, and harvesting will begin in less than a month; therefore, all indications point to little or no damage from the pea aphid in this section for the present year."

Delaware C. H. Popence (April 26). "The pea aphid has appeared in such threatening numbers in Delaware as to attract the attention of commercial canneries."

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Indiana J. J. Davis (April 15). "This insect has not yet made its appearance, probably due to the frequent cold rains which have appeared in this section."

Missouri A. C. Burrill (April 22). "First adult observed today near Utica."

MELONS

MELON APHID (Aphis gossypii Glov.)

Indiana J. J. Davis (April 15). "Requests for information relative to the control of this insect have been received throughout the spring."

Florida Jeff Chaffin. "On April 1 Mr. H. E. Stevens reported that this insect had made its appearance within the past ten days in the Fort Myer district where it did severe damage last year to water-melons. K. C. Moore reported on April 6 that complaints were being received from farmers all over Marion County."

SQUASH

SQUASH BUG (Anasa tristis DeG.)

Nebraska M. H. Swenk (April 15). "The squash bug was reported as coming from hibernation in Holt County and in Deuel County a few days later."

FOREST AND SHADE-TREE INSECTS

GIPSY MOTH (Porthetria dispar L.)

Connecticut W. E. Britton (April 24). "Scouting by State and Federal men shows a widespread scattered infestation throughout Tolland, Hartford, and the northern edges of Litchfield and Middlesex Counties. Even Wolcott, in New Haven County, is slightly infested. This about doubles the area in Connecticut known to have been infested last year. Increase apparently due to wind spread in 1920 and 1921. In a few cases old egg clusters were found which hatched in 1921 and new ones near by."

UMBRELLA ANT (Atta texana Buck.)

Louisiana T. H. Jones (December 27, 1921). "A few years ago I recorded, in the Journal of Economic Entomology, the occurrences of the ant Atta texana at Glenmora in Rapides Parish, this State. I believe this was the first notice in print of its occurrence outside the State of Texas. I have recently received specimens sent in by Mr. J. H. Cook, of Minden, La., with the information that they were secured from " sec 26 T. 18 R 8 about three miles southwest of Taylor Station (Bienville Parish) on the V. S. and P. R. R." Mr. Cook also writes that he has found a colony at Minden "that looks like the same kind." It is quite possible that were a careful survey made, this ant would be found to have a much more widespread distribution in the State than our present records indicate."

BOX ELDER

BOX ELDER PLANT-BUG (Pentocoris trivittatus Say)

Nebraska M. H. Swenk (April 15). "Indications are that this insect will be unusually obnoxious this year. They were reported coming out from hibernation in Hamilton County on March 12th, in Phelps County and Boone County on March 17th and from other Counties later on in March."

ASH

OYSTER-SHELL SCALE (Lenidosaphes ulmi L.)

New York C. R. Crosby and assistants (April 18). "These insects have been reported as very abundant in Ulster County and also in Ithaca on ash trees."

OAK

Andricus coronus B&T.

Georgia O. I. Snapp (March 25). "Very bad on water oaks used as ornamentals in Fort Valley."

LOCUST

LOCUST BORER (Cyrtene robiniae Forst.)

Indiana J. J. Davis (April 15). "The locust borer has been reported as destructive by several correspondents in southern Indiana."

PINE

PINE BARK LOUSE (Chermes pinicorticis Fitch)

Delaware C. O. Houghton (April 17). "More abundant than usual about Wilmington."

Missouri A. C. Burrill (April 13). "Underside of limbs of trees at Shelbyville were white for several yards, almost as though whitewashed from below."

DOUGLAS FIR

DOUGLAS FIR TENT CATERPILLAR (Euschausia argentata Pack.)

Oregon A. L. Lovett (April 15). "This caterpillar hatches in the fall and feeds for a time, passing the winter in compact webs similar to those of the brown-tail moth of the East. The larvae are active very early in the spring and are about one-half grown at the present date. A tachinid is a very effective parasite of this insect, destroying from 1 to 80 per cent of the caterpillars, depending upon the locality. The pest is very general on fir throughout western Oregon, trees having twelve or more nests."

YEW

Pseudococcus cornstocki Kuwana

New York C. R. Crosby (February 27). "Observed shrubs badly infested with this scale insect in Nassau County."

GREENHOUSE AND ORNAMENTALS

BOXWOOD

BOXWOOD LEAF-MINER (Monarthropalpus buxi Labou.)

New York C. R. Crosby (March 8). "Patches badly infested at Sea Cliff, Long Island."

E. P. Felt (April 24). "Mr. Wm. Beutenmueller reports that the boxwood leaf-midge is quite abundant and injurious in Woodlawn Cemetery in New York City."

Paratetranychus votheri McGregor.

Maryland E. N. Conroy (April 16). "This insect did serious injury at Havre de Grace and Baltimore last year and was observed for the first time this year on the above date."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL-MIDGE (Diarthronomyia hyogaia Loew.)

Indiana J. J. Davis (April 15). "The chrysanthemum gall-midge has been the subject of numerous inquiries from florists. This is one of the most serious greenhouse pests in Indiana."

GREENHOUSE THRIPS (Heliothrips haemorrhoidalis Bouche)

New York C. R. Crosby (March 17). "Badly infested chrysanthemum plants were sent in from Oneida on this date."

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

New York E. P. Felt (April 24). "Mr. R. E. Horsey reports that this insect has been so abundant in Highland Park on Euonymus radicans and its varieties that, with the exception of one planting, they are all cut to within 6 or 8 inches of the ground and sprayed with miscible oil. This pest has caused greater loss than any scale insect in recent years. It is not readily controlled on evergreen trees since the leaves are spoiled with spraying with miscible oil."

Maryland M. D. Leonard (April 24). "Euonymus bushes badly infested at Lauraville."

CYCLAMEN

CYCLAMEN MITE (Tarsonemus pallidus Banks)

Wisconsin E. L. Chambers (March 20). "Unusually severe losses in greenhouses during the winter in Madison, Beloit, and Milwaukee. One Beloit florist reports 600 cyclamens a total loss."

RHODODENDRON

RHODODENDRON BORER (Sesia rhododendri Beut.)

Connecticut W. E. Britton (April 24). "Serious injury to plants at New Haven and South Manchester. Nothing like it has been seen around here before. Many plants are dead."

ROSE

ROSE SCALE (Aulacaspis rosae Bouche).

New York C. R. Crosby and assistants (March 28). "Badly infested rose bushes observed at Newburgh and Ithaca."

E. P. Felt (April 24). "Somewhat numerous on both rosa and rugosa rose varieties in Highland Park, though it does not seem to bother other roses in the same patch."

HOUSEHOLD INSECTS

MYRIAPODS (Julus sp.)

Nebraska M. H. Swenk (April 15). "Last fall there was an unusual number of millipedes. In many localities in the State they became a pest, trying to make their way into the basements of houses, both on farms and in the cities. Reports during the period above covered (March 15-April 15) indicate their continued presence in basements and under the mulching of strawberry beds."

TERMITES (Reticulitermes flavipes Kol.)

Indiana J. J. Davis (April 15). "Have received several reports from the southern half of the State within the past two weeks, reporting injury in dwellings."

Louisiana Ed. Foster (April 6). "Serious structural damage to a dwelling house through this insect is reported from New Orleans. In this case the insects swarmed a couple of days ago, somewhat late for this region. This is the third call that I have had and in no case has any creosoted timber been used in construction."

INSECTS ATTACKING DOMESTIC ANIMALS

CATTLE

OX WARBLE (Hypoderma lineatum DeVill. and H. bovis DeG.)

Indiana J. J. Davis (April 15). "This insect is rather more severe at Lafayette than this time a year ago."

Illinois W. P. Flint (April 18). "A very few maggots in advance stage of development were observed at Aurora on this date."

Texas F. C. Bishopp (April 28). "Reports received on these pests show that the infestation of the past winter and spring has been unusually irregular. The abundance of grubs was about normal in southwestern and north-central Texas but in central west Texas they seem to be more numerous than usual."

HORSEFLIES (Tabanidae)

Louisiana T. H. Jones (April 15). "Horseflies and deer flies have already begun to appear in this section, though as yet not in numbers. The first specimen was taken March 28 and up to date what appeared to be the following species were taken: Tabanus megierlei, T. purilus, T. triraculatus, Chrysops rikei, C. callidus, and C. lugens."

HORN FLY (Haematobia irritans L.)

Texas F. C. Bishopp. "The first horn flies appeared in the vicinity



of Dallas about March 10. They became sufficiently numerous by April 1 to be very annoying to livestock, but their abundance is probably not above normal."

SCREW-WORM (Chrysomya macellaria Fab.)

Texas F. C. Bishopp (April 28). "These flies are reported by Mr. D. C. Parman to have appeared about the middle of April in swarms greater than have been observed since the Bureau station was established at Uvalde nine years ago. Their abundance on the plateau region at Sonora, as reported by Mr. O. G. Babcock, is about normal for this time of year and their prevalence in the vicinity of Dallas is practically normal. Their unusual abundance in the southwestern part of the State, however, indicates that the depredations of the insect will probably be heavier than normal this year. The rains which have occurred throughout west Texas will, no doubt, favor their breeding in that region."

BLACK BLOW-FLY (Phormia regina Meig.)

Texas F. C. Bishopp (April 28). "This species, which is responsible for wool maggots in sheep in the Southwest, was very abundant in the vicinity of Dallas in March and is still increasing. Mr. O. G. Babcock reports this species to be unusually abundant for the middle of April in the vicinity of Sonora."

BITING LOUSE OF CATTLE (Trichodectes scalaris Nitz.)

New York R. Matheson. "Large quantities of material, showing serious infestation by this pest, were received from Schuylerville, in January, and from McGraw, in March."

Texas F. C. Bishopp (April 28). "This species was not as prevalent throughout north-central Texas as it has been in many years, but a very few heavily infested animals were observed."

SUCKING LICE OF CATTLE

Texas F. C. Bishopp (April 28). "None of the three species of sucking lice were as abundant on cattle the past winter and spring as is usual in this section."

CATTLE SCAB (Psoroptes communis Furst.)

California (Weekly news letter, State of California Department of Agriculture) (April 15). "Last week Dr. Edward Records, State Quarantine Officer of Nevada, notified Chief of the Division of Animal Industry of this State that six bulls had been purchased from a herd in Carson Valley, Nevada, where cattle scab is known to exist, and shipped to California in the vicinity of Topaz and Coleville. Measures are being taken to prevent the introduction of this pest from the colony established in California."

POULTRY

POULTRY FEATHER MITE (Liponyssus silviarum Can. & Fanz.)

Indiana J. J. Davis (April 15). "Poultry feather mite again showed up in abundance at Lafayette. Experiments conducted by Mr. Cleveland demonstrated that quite effective results are to be attained by the use of superfine sulphur as a dust for winter use."

FOX

EAR MITE (Otodectes cynotis Herinz)

Massachu- H. T. Fernald (April 25). "Specimens of the ear mite were found
setts on January 20, causing considerable trouble working in the ears
of domesticated foxes at a fox farm in this State."

INSECTS ATTACKING STORED PRODUCTS

BEAN WEEVIL (Mylabris obtectus Say)

- New York C. R. Crosby and assistants report that these insects continue to be seriously troublesome in various parts of the State. In one case at Trumansburg 20,000 bushels of beans are infested."
- Nebraska M. H. Swenk (April 15). "Complaints of injury by stored-grain pests are decreasing in number. The bean weevil has, however, been more than usually obnoxious in stored beans, both in warehouses and homes."
- Wisconsin S. B. Fracker (March 17). "Complaints of damage from this source much more numerous than usual during the past winter."

WHITE-MARKED SPIDER BEETLE (Ptinus fur L.)

- Wisconsin S. B. Fracker (March 17). "Very numerous in clover seed at wholesale seed houses associated with other common stored-product pests."
- South Dakota H. C. Severin (April 22). "This insect was much more abundant last year than in former years. It did considerable harm to bags of flour and stored oats and barley over the eastern half of the State."

BLACK CARPET BEETLE (Attagenus piceus Oliv.)

- New York C. R. Crosby and assistants (March 15). "Reports of rather serious infestation of households were received from Rochester and Ithaca."

Trogoderma tarsale Mels.

- Indiana J. J. Davis (April 15). "Larvae reported as doing considerable damage to torato seed by an Indianapolis seed house. Could get no specimens but from the description it was, apparently, Trogoderma tarsale."

MEDITERRANEAN FLOUR MOTH (Ephestia kuehniella Zell.)

- Iowa. F. D. Butcher (April 18). "Mill insects have started to appear this spring. Complaints about the Mediterranean flour moth are most numerous. However, a few reports of the square-necked and saw-toothed grain beetles have been received."

INDIAN-²MEAL MOTH (Plodia interpunctella Hbn.)

- Delaware C. O. Houghton. "Walnuts purchased at a local grocery store last fall were found to be 100 per cent infested by this insect."

THE INSECT PEST SURVEY BULLETIN

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OUTSTANDING ENTOMOLOGICAL FEATURES FOR MAY, 1922.

The Hessian fly situation as a whole is most encouraging. Reports from Indiana, Illinois, Missouri, and California indicate that practically no damage will be done. Central Tennessee alone seems to be seriously infested.

The chinch bug is becoming more threateningly numerous throughout the East-Central States, and is again appearing in the North-Central States. The first authentic specimens that have been taken in 10 years are reported from Minnesota, and the pest is again appearing in southeastern Nebraska.

The pale western cutworm promises as serious an infestation throughout its North Dakota and Montana range as occurred last year.

The heavy floods in the Ohio and Mississippi River Valleys have developed an ecological condition favorable to the abnormal increase of certain lepidopterous larvae. Indiana reports that the black cutworm is feared in the overflowed Wabash River Valley, and Louisiana reports that the army worm has already appeared very serious in overflowed regions in that State.

An unconfirmed report of an outbreak of the true army worm in upper Pennsylvania has been received.

Throughout the Middle Atlantic States and as far west as Indiana reports are being received of an unusual abundance of the brassy flea-beetle.

The clover leaf weevil is not as serious as was anticipated early in the spring. This insect is being controlled over part of its range by the common fungous disease Entomophthora sphaerosperma Pres. It is much more abundant than usual, however, over the eastern half of Kansas.

The various fruit aphids are not as severely abundant as usual over the greater part of the apple-growing sections of the eastern United States. In the New England and Middle Atlantic States the late frosts checked these insects with the possible exception of the rosy apple aphid. In the Mississippi River Valley, however, very severe outbreaks are reported from Minnesota, Iowa, and Arkansas.

Tent caterpillars are reported throughout the New England and Middle Atlantic States as unusually abundant.

The apparent increase of the San Jose Scale over much of the eastern United States, reported last year, is being confirmed by reports received this month.

Pears and plums are being seriously damaged in Oregon and California by the pear thrips.

The blackhead cranberry worm is appearing so numerous in the central counties of Wisconsin that control flooding is being practised.

Hopperburn of a typical nature associated with the potato leafhopper is reported from Louisiana, this being much south of the general range of this trouble.

About 3 years ago specimens of a small nitidulid were sent to the National Museum from Youngstown, N. Y., for determination. These proved to be the European Heterostomus pulicarius L., a species apparently of but little economic importance in Europe, where it is recorded as feeding on the pollen of Linaria. In 1920 Mr. H. Notman described what Mr. Schwarz considers as this species under the name of H. mordelloides, from Schoharie, New York. In 1921, Mr. H. Morrison collected specimens of this same beetle in Arnold Arboretum at Boston. In this number of the Bulletin is a report by Dr. E. P. Felt that this insect is seriously damaging strawberries in Columbia County, and is distributed over Saratoga, Albany, Niagara, and Schoharie Counties, New York. The damage is done by the adult beetles feeding at the base of young blossoms and producing "nubbins" or entirely destroying the fruit.

An infestation of approximately 1,000 acres of peas in the San Joaquin Valley in California by the pea aphid was reported early this month. At that time the infestation was not serious.

Reports from the greater part of the cotton belt indicate that there is an unusually large number of boll weevils on small cotton for this time of the year, and on May 24 weevils were more numerous in the vicinity of Tallulah, La., than in any previous year of which records are available.

Turkey gnats are unusually abundant in parts of Nebraska and Missouri where they are so seriously attacking poultry that chickens and even mature fowls are being killed.

One of the most interesting developments of the month has been the determination of a beetle, collected in a Connecticut nursery during the past two years, as Anomala orientalis Waterh., the anomala which occasioned so much concern in Hawaii about 10 years ago. The insect is a native of Japan and was probably introduced into Hawaii before 1908 in soil on the roots of imported plants from Japan. In 1908, Dr. Lyon, then working with the Hawaiian Sugar Planters Association observed large numbers of these larvae at the base of cane plants but mistook them for the Japanese beetle of Hawaii (Adoretus tenuimaculatus Waterh.). In 1912 Dr. A. Spear, in studying the fungous diseases of insects affecting sugar cane in Hawaii, collected a number of these larvae and turned them over to Mr. F. Muir, who recognized them as a species new to the Islands. In June of that year Mr. Muir visited the infested fields and collected adults. The pest, though infesting but a small area, was extremely destructive, and the Hawaiian Sugar Planters Association detailed a specialist to proceed to the Orient and obtain parasites for the control of this pest. This work was so successful that one of the parasites (Scolia manilae Ashm.) was established between the years of 1914 and 1916, and by 1919 it had so thoroughly controlled this pest that from an area where, in 1917, 3,500 anomala grubs were collected only 4 grubs were found by most diligent search. The parasite has extended its range beyond the area infested by the anomala and is now infesting the Japanese beetle of Hawaii. That the anomala is established in Connecticut seems evident, as specimens have been collected in the same nursery two successive years.

CEREAL AND FORAGE - CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

- Indiana J. J. Davis (Insect Notes No. 10, May 17). "The Hessian fly will do very little injury this spring in Indiana."
- Illinois W. P. Flint (May 18). "Heavy rains at time of emergence of the adults have reduced the spring brood so that practically no damage will occur this season."
- Missouri A. C. Burrill (May 4). "Much less abundant this year than usual. September brood has not yet emerged; other broods evidently perished."
- Tennessee G. G. Ainslie (May 15). "In central Tennessee (Maury County) the spring brood of the Hessian fly had about half pupated during the last week in April. A few days later the larvae were reversing themselves in the puparia and since then some flies have emerged. The infestation throughout central Tennessee is unusually heavy for the spring generation. Examination of samples by Mr. Larrimer show 23 per cent of culms and 93 per cent of the plants infested. A secondary or supplementary spring brood of the fly in this section seems certain."
- California C. M. Packard (May 1). "The Hessian fly is not injuring wheat as seriously as usual in the Montezuma Hills wheat-growing section this year. This seems to be due to cold windy weather in March and early April when flies were emerging from the stubble, and excessive moisture has enabled wheat to outgrow fly injury."

GRASSHOPPERS (Acridiidae)

- Wisconsin S. B. Flacker (May 23). "First and second instar nymphs are appearing in the northeastern part of this State, east of a line extending from Iron to Portage Counties and north of Waushara and Door Counties."

MARCH FLIES (Bibio spp.)

- Idaho R. A. Muttkowski (May 12). "During the past two weeks reports have been received (with specimens) of serious damage to winter wheat. The fly Bibio Hirtus was reared from this material. This fly is exceedingly abundant in Latah County every year, but this is the first time that any specific damage has been attributed to it. The pest is reported as feeding on the roots of wheat plants."

WESTERN WHEAT-STEM MAGGOT (Pegomya cerealis Gill.)

Nebraska

M. H. Swenk (May 15). "Early in May the wheat fields in Scottsbluff County developed an infestation of the western wheat-stem maggot. The maggots were full grown and preparing to pupate on May 9. This infestation coincides seasonally with the infestation that was found in Colorado in 1903, at the time of the original discovery of this pest, and is considerably later than the infestation that occurred last year in Morrill County in this State, when the adult flies emerged early in May. It seems possible, therefore, that this pest has three generations in the wheat before harvest: The first in the middle of April, the second in the middle of May, and the third in the latter part of June and in early July."

CHINCH BUG (Blissus leucopterus Say)

Ohio

T. H. Parks (May 20). "Greater damage is anticipated from chinch bugs in the northwestern quarter of Ohio than for several years. Bugs were flying in considerable numbers early in May."

Indiana

J. J. Davis (May 15). "As anticipated, the chinch bug is showing up in many sections of the State. Reports of rather heavy infestations of adult bugs in grain fields have already been received. There was no conspicuous flight of chinch bugs at LaFayette previous to May 1, on which date we observed a considerable flight, and on the following Thursday (May 4) there was a very heavy flight of bugs which seems to have been rather general and widespread."

Illinois

W. P. Flint (May 18). "Adults more abundant than last year in most counties in central Illinois and slightly to moderately more abundant in southern Illinois. Damage will occur over at least two-thirds of the State. Eggs just being deposited; no young bugs reported even in extreme southern part of State."

Minnesota

A. G. Ruggles (May 17). "Of the cereal insects probably the most important is a kind of chinch bug. These were taken in the northern part of the State the first of the month and are the first authentic specimens we have taken in Minnesota for 10 years."

Nebraska

M. H. Swenk (May 15). "The chinch bug was noted as active in the wheat fields of Thayer County on April 12."

Missouri

A. C. Burrill (May 3). "Heavy infestation in immediate vicinity of straw-stack in Bates County. Bugs dispersing on foot in all directions; no flight." (May 5). "General mating earlier than last year in Carroll and Bates Counties." (May 25). "To date we have reports of chinch bug abundance from Callaway, Monroe, Montgomery, Schuyler, Bates, and St. Clair Counties."

GREEN BUG (Toxoptera graminum Rond.)

- Texas E. E. Russell (May 8). "Several fields in Floyd and Foard Counties were found to be quite severely injured by the green bug. One field consisting of 200 acres in Floyd County was a total loss. This particular infestation is supposed to have started from volunteer grain near a strawstack on the premises. These local outbreaks are the only records of injury which have reached us from northern Texas this year, and damage has ceased owing to control of pest by its natural enemies."

JOINTWORM (Harmolita tritici Fitch)

- Illinois W. P. Flint (May 18). "Ovipositing in large numbers through central Illinois during week of May 8, particularly abundant in western Illinois."

ARMY CUTWORM (Chorizagrotis auxiliaris Grote)

- Montana W. C. Cook (May 5). "Army cutworms quite abundant. About half grown at Fresno, Kremlin, and Laredo. Much later than usual in appearance, no evidence of migration as yet."

PALE WESTERN CUTWORM (Porosagrotis orthogonia Morr.)

- North
Dakota R. L. Webster (May 12). "This insect is appearing fully as bad as last year. The infestation seems to be most severe in Golden Valley County, although injury extends eastward and southward. A tachinid parasite was noticed in numbers."
- Montana W. C. Cook (May 5). "This insect appeared for the first time this season near Laredo." (May 15). "At the northern Montana substation, these larvae are apparently as abundant as last year, though somewhat smaller than they were at this time in 1921."

BLACK CUTWORM (Agrotis ypsilon Rott.)

- Indiana J. J. Davis (May 15). "The overflow worm, so called because it follows the late overflows of the Wabash River and its tributaries in southwestern Indiana, is likely to be very abundant this spring, and probably more destructive than in previous years, because of a larger acreage in corn. Twenty thousand acres of wheat was destroyed by water overflow in Gibson County which will probably be planted to corn, making a total of 60,000 acres in this one county which is subject to overflow worm attack. This same species seems to follow late overflows wherever they occur."

FALL ARMY WORM (Laphygma frugiperda S. & A.)

- Louisiana T. H. Jones (May 17). "Because of the large amount of territory overflowed in this State, a number of requests have already been received for information on preventive measures against grass worms. Injury by grass worms (usually Laphygma frugiperda) is common to plants planted on overflow land."

LESSER MIGRATORY GRASSHOPPER (Melanoplus atlantis Riley)

Montana A. L. Strand (May 19). "The eggs of this grasshopper are reported to be hatching in Yellowstone County."

UPLAND CORN WIREWORM (Melanotus pilosus Blatch.)

Nebraska M. H. Swenk (May 15). "The upland corn wireworm was found eating off the roots of wheat and barley and killing out large patches in the field in Adams County on May 8. Wireworms, presumably of the same species, were responsible for the killing out of the young alfalfa sown in Clay County fields last fall and resown this spring. The spring sowing had been practically destroyed by May 9."

GREAT PLAINS FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (May 15). "In addition to the losses of wheat in Deuel County due to injuries by the Great Plains false wireworm, reported last month, similar injuries have since developed in Scottsbluff County. In one 160-acre field of winter wheat about 70 acres had been destroyed by May 4."

CORN

ARMY WORM (Cirphis unipuncta Haw.)

New York C. R. Crosby (April 26). "First adults of the season collected at trap lantern on this date."

Pennsylvania W. R. Walton (May 26). "County agent located at Erie, Pa., reports, under date of May 24, the presence of a local outbreak of the true army worm. We are endeavoring to confirm this report by sending one of our corn borer men to Erie."

WEBWORMS

Tennessee G. G. Ainslie (May 15). "Larvae of Crambus mutabilis Clem. have been taken in considerable numbers from corn on new and sod land. This is the only species that has been found attacking corn thus far this year. Moths of the following species were first observed on the dates given: Crambus praefectellus Zinck., April 15; C. laqueatellus Clem., May 3, C. mutabilis, May 12; all observations at or near Knoxville. Larvae of the burrowing webworms of at least two species, probably Acrolophus popeanellus Clem. and A. arcanellus Clem., have been found around Knoxville. A young corn plant attacked by either is usually completely consumed. The burrowing webworms can usually be distinguished from the crambid larvae by their burrows being open, while the latter close their burrows at the surface of the ground with a valve."

FLEA-BEETLES (Halticinae)

- Maryland E. N. Cory (May 13). "Chaetocnema pulicaria Melsh. is doing serious damage to corn in Montgomery and Hartford Counties."
- Indiana J. J. Davis (May 15). "A small black flea-beetle (species not determined) was damaging sweet corn near Terra Haute on May 9, and apparently it had been attacking the plants for several days before they were observed. The injury was quite serious and general in that section."
- Tennessee G. G. Ainslie (May 15). "Corn planting has been delayed over the whole eastern half of the State by the continued rainfall. In some early planted fields on new or sod land near Knoxville flea-beetles (Chaetocnema pulicaria) were found so abundant that some plants had evidently been killed by them. There were often 30 of the beetles on a plant with but two or three leaves."
- Missouri A. C. Burrill (May 24). "Corn seriously damaged in Marion, and Ralls Counties. Farmers fear flea-beetles will be worse than chinch bugs."
- Arizona Correction: In the last number of the Survey Bulletin the note on Phyllotreta pusilla Horn, page 38, should have been under Chaetocnema ectypa Horn.

CLOVER

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

- Indiana J. J. Davis (April 15). "Reported as injuring clover in southern Indiana within the past week." (May 15). "Not as many reports were received as anticipated, which was probably due to the fact that in the low areas they were destroyed by the overflow and in other sections of the State clover made such a heavy growth that the injury was not noticeable, even where the weevil larvae were present."
- Iowa Fred D. Butcher (May 17). "The clover-leaf weevil has appeared in practically the same areas as reported last year; only occasional fields are seriously damaged at this time. A fungus is attacking the weevil and is controlling it very successfully, especially in the southeastern part of the State. In the south-central part the disease is present in nearly all fields, but not sufficiently epidemic to control the weevil."
- Missouri A. C. Burrill (May 11). "This insect is less abundant than usual, probably due to fungus disease; in fact, damage has practically ceased."

Illinois S. C. Chandler (April 27). "At the start of the season considerable feeding was done and severe injury anticipated. The fungous disease of this insect was becoming prevalent during the week ending April 29, and clover is now recovering with no prospect of further injury. The first pupa was observed by myself and Mr. B. W. Cartwright on April 24 at Centralia. The first adult was observed April 26 at Fairfield."

Kansas E. G. Kelly (May 6). "This insect is much more abundant than in previous years. The larvae are now from one-half to two-thirds grown. It is quite generally distributed over the eastern half of the State."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Ohio T. H. Parks (May 20). "This insect continues to be the worst pest of red clover in western Ohio. Larvae have been hatching since May 1. The clover promises to make a good tonnage with the usual number of insects present. The area of serious infestation has been extended southward across the State and now includes the area about Columbus and Marion."

Illinois W. P. Flint (May 18). "Weevils left hibernation very late. They are not as abundant in fields as during the season of 1921. Very small larvae and eggs were observed on this date."

CLOVER MITE (Bryobia praetiosa Koch)

Oregon A. L. Lovett (May 9). "This mite was observed for the first time in this locality. Small heavily infested areas were found in the college experimental plats. Weather has been cold and rainy up to within the past few days."

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeGeer)

- Massachusetts A. I. Bourne (May 12). "This insect is much less numerous than usual, probably due to very cold weather from April 20 to April 22."
- New York C. R. Crosby and assistants. "Late in April this species was in conspicuous numbers in Niagara, Monroe, and Wyoming Counties. The very cold weather, however, seems to have materially reduced their number, as they were reported during the first half of May as very scarce throughout the greater part of the State."
- Pennsylvania S. W. Frost (May 13). "This species was not as prevalent as the other species of aphids on apples this year."
- Iowa F. D. Butcher (May 17). "The green apple aphid is still causing damage in counties in which no efforts were made to control it. Orchards in Madison County show the aphid present in large numbers. No general migration to oats up to this date."
- Arkansas Dwight Isely (May 22). "Much more abundant than usual and generally distributed in nearly all orchards in the northwestern corner of the State. This is the first outbreak occurring in this region since 1918 and has been quite severe, considerably checking the growth of young trees."
- APPLE-GRAIN APHID (Rhopalosiphum prunifoliae Fitch)
- Pennsylvania S. W. Frost (May 13). "This species has been very abundant this spring."
- New York C. R. Crosby and assistants. "These insects were quite abundant during the third week in April but heavy freezes have reduced them to a negligible factor."
- Illinois C. P. Compton (April). "Apple trees are generally infested with aphids in the northern part of the State. In some sections the infestation is heavy."
- Wisconsin S. B. Fracker (May 20). "This insect was present in large numbers throughout the State as the buds were opening. It has been practically eradicated by Syrphidae and Coccinellidae."

- Minnesota A. G. Ruggles (May 17). "Late in April many green apple aphids were found on apples around Lake Minnetonka. They had just hatched and were very numerous."
- Missouri A. C. Burrill (May 11). "Earlier in the season these insects were much more numerous than usual in Chariton County. Heavy rains are said to have cleaned them up."
- Kansas E. G. Kelly (May 6). "This insect began to appear in considerable numbers by April 2. Spraying with nicotine sulphate has not been very effective."
- Arkansas Dwight Isley (April 29). "There has been an outbreak of the green apple aphid and the European grain aphid over the fruit regions of northwestern Arkansas. The injury is not severe but the insects are, apparently, present in practically all orchards. This is the first aphid outbreak on apples since I came to Arkansas in the spring of 1918."

ROSY APPLE APHID (Amuraphis roseus Baker)

- Connecticut W. E. Britton (May 23). "This insect was observed as causing some curling of leaves at Mt. Carmel. Syrphid larvae are present."
- New York C. R. Crosby and assistants. "During the last week in April hatching was quite general over the fruit growing sections of New York. This aphid seems to have resisted freezing weather fairly well and during the first half of May considerable leaf curling was observed."
- Pennsylvania S. W. Frost (May 13). "During the first part of April counts of the three species of aphid on apple showed a very small percentage of the rosy apple aphid. Since that time this insect has increased in numbers and orchards in Adams County, where nicotine was not used in delayed-dormant spray, show bad infestation of this aphid. A higher percentage is evident this year than has been noticed for five years."
- Maryland J. A. Hyslop (May 20). "The rosy apple aphid is much more numerous in the southern part of Montgomery County than last year. Considerable curling of leaves is now evident in some unsprayed orchards."
- Delaware J. F. Adams (May). "Serious injury by this species is reported from several localities."

. CODLING MOTH (Carpocapsa pomonella L.)

- New York C. R. Crosby and assistants. "Mr. G. E. Smith reports that in Orleans County very little pupation had taken place up to May 2. Of 33 specimens collected in one orchard, 32 were larvae and but one a pupa. By May 13 not over 12 per cent had pupated and by May 16 the larvae were still very numerous and comparatively few had pupated. Mr. F. D. Rupert makes a very similar report from Wayne County."
- Indiana J. J. Davis. "The first emergence of the codling moth was observed on May 3 at Clayton and at LaFayette on May 9. There are no special indications of an unusual abundance of this insect."
- Illinois W. P. Flint (May 18). "Emergence of adults started in southern Illinois on May 1; in north-central Illinois, on May 14. But few worms are to be found in orchards on this date."
- Arkansas Dwight Isely (April 29). "First record of emergence at Fayetteville on April 20. "
- Washington E. J. Newcomer (May 15). "The minimum winter temperature has ranged from 8 to 10 degrees below zero, resulting in about 4 per cent winter kill. No moths are flying up to this date."

. . CLIMBING CUTWORMS (Species not determined)

- Washington E. J. Newcomer (May 15). "Probably two or three hundred acres in the Yakima Valley have been protected by putting a band of axle grease around the trunk of each tree. This was done by the growers against the advice of horticulturists who feared injury to the trees from the grease. A few growers used cotton bands with success. These climbing cutworms are much more abundant than usual."

. . FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walk.)

- New York C. R. Crosby and assistants. "This insect is appearing in considerable numbers in Orleans, Monroe, and Chautauqua Counties. They are comparatively scarce throughout the remainder of the fruit section. Approximately two-thirds of the eggs had hatched by May 6 in Niagara County, according to Mr. L. F. Strickland, while egg hatching had just started in Orleans County on May 8."

Oregon D. B. Fulton (April 25). "This insect is decidedly on the decrease and is no longer a serious pest in the LaGrande region. Spraying with miscible oil has been practised in this region for the past four years."

LEAF CRUMPLER (Mineola indigenella Zell.)

South
Dakota H. C. Severin (April 25). "This insect is quite a general pest on apples this year."

CIGAR CASE-BEARER (Coleophora fletcherella Fern.)

New York C. R. Crosby and assistants. "This insect is reported as numerous from Orleans, Wayne, Nassau, and Monroe Counties and present in moderate numbers in Genesee, Ulster, Seneca, Onondaga, and Chautauqua Counties. Very few are to be found in well sprayed orchards."

Missouri A. C. Burrill (May 12). "So numerous in parts of Chariton County that they are girdling large twigs."

BUD MOTH (Tmetocera ocellana Schiff.)

Massachusetts H. T. Fernald (April 19). "Mr. H. A. Mostrom, of the Essex County Agricultural School, reports that this insect is very steadily increasing and is now prevalent enough to be considered as a general pest in Essex County."

Connecticut M. P. Zappe (May 24). "This insect is noticeably less abundant about Milford than it was last year."

New York C. R. Crosby and assistants report this insect as very numerous in Nassau County and on the increase in Onondaga, Orleans, Genesee, and Wayne Counties and that a few were reported from Monroe, Columbia, Niagara, Ulster, Seneca, and Rockland Counties."

Oregon A. L. Lovett (May 10). "This insect is much above the average in abundance and injury this year. The damage is usually confined to stone fruits, but this year all fruits show heavy infestation."

GREEN FRUITWORM (Xylina antennata Walk.)

New York C. R. Crosby and assistants report this insect as quite abundant in Wayne and Chautauqua Counties about the middle of May.

Pennsylvania S. W. Frost (May 13). "Larvae rather abundant this spring. They were easily killed with lime-nicotine dust, Niagara D-11."

TENT CATERPILLAR (Malacosoma americana Fab.)

- Massachusetts H. T. Fernald. "Tent caterpillars seem to be very much more abundant than last year. In Essex County hatching started about April 10 and nests were pretty well filled by May 10. They were also reported as seriously abundant in Lincoln and Worcester Counties. The present outbreak seems to be the worst that has occurred in this State in years."
- Connecticut D. A. Porter (May 24). "This insect is much more abundant than last year and is, apparently on the increase in the vicinity of Wallingford. Many of the nests have been deserted and the spinning of cocoons is just beginning."
- New York C. R. Crosby and assistants. "Tent caterpillars have appeared in considerable numbers in Dutchess, Orange, Rockland, Ulster, and Wayne Counties. In Wayne County the nests are increasingly noticeable, especially where poor spraying has been carried on."
- New Jersey H. B. Weiss (May 16). "This insect is four or five times as numerous as during normal years. A general outbreak is occurring over the entire State. Mr. F. L. Rook reports that 90 per cent of all the wild cherry trees are more or less defoliated in the southern part of the State."
- Delaware C. O. Houghton (May 10). "This species is more abundant than usual this year. Caterpillars are now migrating, preparing for spinning up. The accumulated excess temperature at Newark is approximately 350 degrees."
- Maryland A. L. Quaintance (May 25). "This insect seems to be unusually abundant in the environs of Washington, D. C., on wild cherry, apple, etc."
- . . . FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)
- Minnesota A. G. Ruggles (May 17). "Numerous reports have come in concerning the forest tent caterpillar."
- . . .
- North Dakota R. L. Webster (May 18). "This insect is more abundant than usual. Young larvae causing damage to the foliage of apple and plum."

Oregon A. L. Lovett (May 17). "Malacosoma pluvialis Dyar, is excessively abundant in southern Oregon and decidedly more numerous than it has been since 1912 in the Willamette Valley. It is not uncommon to observe in the prune orchards of the Willamette Valley an average of five tents to the tree. The tents are also conspicuous on wild roses along highways and fence rows."

SPRING CANKERWORM (Paleacrita vernata Pack)

New York C. R. Crosby and assistants. "This insect is plentiful in the regions infested last year. Eggs started hatching about May 6 in Orleans County and had practically all hatched by May 12 in Niagara County. They are also reported from Wayne and Orleans Counties."

Delaware J. F. Adams (April 30). "Larvae observed attacking apple at Milford on this date."

Iowa F. D. Butcher (May 17). "Cankerworms in Wapello, Henry, Jefferson, and Lee Counties are causing a good deal of damage, especially in young orchards which were not sprayed. Owing to frequent rains in Lee County, a few of the orchards which were well sprayed are still being attacked."

Minnesota A. G. Ruggles (May 17). "Cankerworms, both spring and fall species, are very numerous with us at this time."

Missouri A. C. Burrill (May 12). "Much less numerous than last year in Chariton County."

FALL CANKERWORM (Alsophila pometaria Harris)

Connecticut D. A. Porter (May 2). "First hatching of eggs observed at Wallingford on this date."

B. H. Walden (May 20). "Locally abundant in New Haven County and injury showing up in some orchards which were not sprayed."

New York C. R. Crosby and assistants. "Adults were first observed at trap lantern on April 10 at Ithaca. Female moth was observed laying eggs at Syracuse on April 19. A few larvae on May 10 in Wayne County."

Minnesota A. G. Ruggles (May 17). "Cankerworms, both fall and spring species, are very numerous with us at this time."

TARNISHED PLANT-BUG (Lygus pratensis L.)

- Pennsylvania S. W. Frost (May 13). "Very abundant in apple orchards in Adams County."
- Indiana J. J. Davis (May 15). "What we believe to be the tarnished plant-bug was reported as killing apple buds at Greenfield on April 19. Specimens were not furnished, but the description and character of the injury agreed very well for the tarnished plant-bug."

FALSE APPLE RED BUG (Lygidea mendax Reut.)

- Connecticut D. A. Porter (May 3). "First hatching of eggs observed on this date, both in insectary and in field at Wallingford."
- New York C. R. Crosby and assistants. "Second-stage nymphs were predominating on May 13 in Green County, while eggs were just hatching on this date in Onondaga County."
- Pennsylvania S. W. Frost (May 13). "Nymphs of this species are numerous, this spring. The foliage shows an abundance of spotting by this insect."

BLACK APPLE LEAFHOPPER (Idiocerus flavidorsum

A. & S)

(Note) "Mr. J. G. Sanders has reduced Idiocerus provancheri Van D. to ~~synonymy~~ under Idiocerus flavidorsum Amyot and Serville."

- New York A. B. Buchholz (May 6). "Black apple leafhopper has been observed in numerous orchards in Columbia County."
- New Jersey M. D. Leogard (May 10). "Observed newly hatched nymphs on April 30 and second-instar nymphs on May 10 in Passaic County."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- New York C. R. Crosby and assistants report that this insect is, apparently, on the increase in Wayne and Orleans Counties while it is comparatively scarce in Ulster, Orange, and Columbia Counties."
- Indiana H. F. Dietz (May 1). "A trip through the southern end of the State shows the San Jose scale 'coming back strong' unless thorough control measures are carried out. At Mitchell some young trees were killed in a single year."

J. J. Davis (May 15). "In addition to other factors, the wet spring has prevented as thorough spraying with the dormant sprays as was necessary to check the increasing numbers of this scale insect. As a result, this insect now threatens to destroy many trees and possibly many orchards unless checked before the next dormant spray can be applied. We are, therefore, urging a summer strength of lime-sulphur to assist in checking the increase of this scale until the next dormant spray can be applied."

Illinois W. P. Flint (May 18). "There is a higher percentage of parasitism of this scale than has prevailed for several seasons."

Missouri A. C. Burrill (May 13). "This insect is much worse than usual in Chariton County, where trees are dying from infestation. It was controlled in all sprayed orchards where spraying was carried on every year. We will try scalicide while the trees are in fruit."

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

Massachusetts H. T. Fernald. "Mr. H. A. Mostrom reports that this insect is becoming more serious than the San Jose scale in Essex County."

New York C. R. Crosby and assistants report that this insect is rather serious in some parts of Columbia, Wyoming, Orange, Onondaga, Wayne, Ulster, and Orleans Counties."

Indiana J. J. Davis (May 17). "The oyster-shell scale is hatching at LaFayette. We are recommending spraying about ten days or two weeks after the young begin to hatch, using whale-oil or fish-oil soap, 1 pound dissolved in 5 gallons of water to which is added 1 ounce of nicotine-sulphate, spraying thoroughly so as to cover all twigs and parts of the twigs. In very severe infestations we are recommending a second spraying eight days after the first."

H. F. Dietz (May 23). "The oyster-shell scale has been hatching and the records for the three forms at Indianapolis, as outlined by Glenn, are as follows: Light brown form began hatching on May 1 to 12; apple form, sent from Hammond, began hatching on May 10 to 21; the grape form began hatching on May 20."

South
Dakota

H. C. Severin (April 15). "This insect is one of our most serious fruit-tree pests."

Oregon D. B. Fulton (April 25). "Have been informed by the county agent that this scale insect is unusually abundant in some parts of Union County."

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

Connecticut P. Garman (May 22). "Mites are very abundant in one orchard in North Branford, New Haven County. The leaves are turning brown in consequence of this infestation."

New York G. E. Smith (May 13). "Eggs are recorded and an abundance of mites have been found on foliage in Orleans County."

A. B. Buchholz (May 13). "This insect is quite prevalent in some orchards in Columbia County."

Pennsylvania S. W. Frost (May 13). "This red spider does not appear to be as abundant as the eggs indicated a month ago. Present conditions indicate a lighter infestation than last year."

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

Massachusetts H. T. Fernald (April 13). "Mr. H. A. Mostrom reports that this insect seems to be very abundant in Essex County. Three-quarters of the trees in one seacoast town were infested."

New York C. R. Crosby and assistants. "The majority of the psylla eggs had hatched in Columbia County by May 6. They were just beginning to hatch on April 29 in this County. Eggs were first observed hatching on May 5 and had practically completed hatching by May 13 in Genesee County. Eggs were still being laid on April 22 and nymphs were abundant by May 13 in Greene County. Egg laying in full progress on April 22 and practically completed by May 6 in Monroe County. Egg laying was in full sway on April 22 in Niagara County. Heaviest egg laying took place in Orleans County on May 8, and the pest is abundant and very generally destructive. Eggs had not all hatched by May 15 in this County. Eggs began hatching on April 27 in Ulster County while second-stage nymphs were fairly common by May 9. In Wayne County the maximum egg laying was completed by April 29. The eggs started hatching about May 13 in this county."

P. J. Parrott (April 29). "Most orchards in Ontario County show considerable egg laying."

L. F. Strickland (May 13). "Records in one of the experimental pear orchards show that 39 per cent of the total egg laying by the psylla has been what is known as belated oviposition. About 32 per cent of the eggs have hatched in this orchard, which is just beginning to blossom. A small number of the nymphs are still in the second instar. This type of oviposition seems to be more prevalent in Niagara County than in other sections of the State."

PEAR THRIPS (Taeniothrips inconsequens Uzel.)

- New York C. R. Crosby and assistants. "Newly hatched thrips were observed on May 6 in Columbia County. As a whole this insect is causing but little damage so far in New York State."
- Oregon A. L. Lovett (April 20). "Adults first appeared about April 20 in Douglass County. Larvae were first observed on May 3. Throughout the area infested by the thrips a physiological disorder affecting the buds of prune makes it difficult to determine definitely the amount of damage done by adult thrips. In general, the weather conditions have been too cool for thrips activity. This is the first year that this pest has been recorded from Youcolla while at Salem it made its first appearance in 1919. Present indications are that the larvae will do considerable injury to prune and pear."
- California O. E. Bremner (May). "Ten per cent of the prune and pear buds have been killed in Sonoma County by the pear thrips. It is particularly bad along sloughs or where the soil is compact and heavy."

PEACH

PLUM CURCULIO (Conotrachelus nemuphar Hbst.)

- Georgia O. I. Snapp. "First adults appeared March 4. First eggs noted in the field April 3. First larvae noted April 6 in insectary. First pupae noted in the insectary May 17. Adults will be emerging in orchards by June 1. Very little damage to date. The Mayflower variety is now being harvested and is free from curculio injury. Curculio suppression campaign has been very successful in Georgia peach belt; 2½ bushels of drops in 1921 gave over 13,000 larvae. This year the same quantity of drops gave less than 3,000 larvae."
- West Virginia F. E. Brooks (May 19). "Plum curculio beetles appeared early, but in limited numbers; something less than usual amount of injury is being done to plum and peaches, scarcely any injury to apples."

Tennessee

S. Marcovitch (May 15). "The curculio is very numerous and many drops are to be found under peach trees."

BOLEDOGRUB (Heliothis obsoleta Fab.)

Georgia

O. I. Snapp (May 1). "Very numerous in orchard near Albany where both vetch and rye have been planted. Many small peaches have been damaged by larvae"

AMERICAN GRASSHOPPER (Schistocerca americana Drury)

Georgia

O. I. Snapp (April 28). "These locusts were very numerous during the latter part of April in the Fort Valley section and have done considerable damage by feeding on small peaches."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia

O. I. Snapp (May 17). "The San Jose scale is, apparently, still increasing in many orchards in central Georgia where the control was unsatisfactory during the past winter."

A FLEA-BEETLE (Trichaltica scabricula Gr.)

Tennessee

G. G. Ainslie (May 15). "A case of severe injury to the foliage of young peach trees by flea-beetles, which I have determined as above, came to my notice. Injury was confined to 1-year-old trees in rows immediately adjacent to land that had been cleared during the past winter. In the two outermost rows trees had been practically defoliated as fast as the leaves appeared."

CHERRY

PLUM APHID (Halticidius satorius Thos.)

Indiana

H. F. Dietz (May 23). "We are having lots of trouble with plant lice on plums and cherries. This seems to be an exceptionally favorable year for the development of aphids."

FRUIT-TREE LEAF SYNETA (Syneta albidula Lec.)

Oregon

A. L. Lovett (May 17). "Heavy foliage and blossoms feeding in the Willamette Valley. Young cherries are beginning to show feeding scars. This beetle seems to be more abundant than normally."

PLUM

PLUM APHID (Hysteroneura setariae Thos.)

- Kansas E. G. Kelly (May 6). "This aphid began to appear abundantly about April 2 and caused much alarm among orchardists, and a general spraying followed. Nicotine sulphate was not effective."
- G. A. Dean (May 15). "This aphid is unusually abundant over the eastern half of the State and in many localities is doing considerable injury."

- Missouri A. C. Burrill (May 12). "In parts of Chariton County about 50 per cent of the terminal twigs are infested by this aphid."

PEACH TWIG MOTH (Anarsia lineatella Zell.)

- California O. E. Bremner (May 1), "Damage to young prune trees seems to increase from year to year. This pest is about 50 per cent more abundant than last year in Sonoma County. Lime-sulphur 1-10 effective here when used about ten days before blooming period."

CURRENT AND GOOSEBERRY

IMPORTED CURRENT WORM (Pteronidea ribesi Scop.)

- New York R.C. Palmer (May 13). "Very abundant this season in Chautauqua County. Larvae one-half inch long can now be found, together with an abundance of eggs!"
- Pennsylvania Geo. C. Edler (Bureau of Markets). "Observed current worms destroying leaves of bushes at Robertsdale."
- New Jersey F. L. O'Rourke (May 15). "Gooseberries are about 90 per cent defoliated and currants about 50 per cent defoliated at Collingswood, in Camden County. This pest is also reported from small gardens in surrounding towns."
- Maryland J. A. Hyslop (May 7). "Nearly full grown larvae were observed in southern Montgomery County defoliating gooseberry bushes. Currants near by were not infested."
- Nebraska M. H. Swenk (May 15). "There is now present a great abundance of young current worms on gooseberries and currants. Reports of injury by this pest have deluged the office since May 8, although worms were noted stripping plants a day or two before that date."

- Kansas G. A. Dean (May 15). "This insect appears to be unusually abundant over the eastern third of the State and is defoliating currants and gooseberries."
- GOOSEBERRY FRUITWORM (Zophodia grossulariae Pack.)
- Indiana J. J. Davis (May 15). "The gooseberry fruitworm is abundant as usual, and some of them are nearly full grown although a majority are about half grown in the vicinity of LaFayette."
- CURRENT BORER (Aegeria tipuliformis Clerck)
- New York C. R. Crosby and assistants (May 15). "Report that this insect is found in moderate numbers in Chautauqua County and on one farm in Ulster County they were killing out the Perfection variety of currant."
- BLACK GOOSEBERRY BORER (Xylocrius agassizi Lec.)
- Oregon A. L. Lovett (May 5). "From 18 to 30 per cent of the older plantings are being damaged by this insect. The larvae are now about two-thirds grown and the damage is very serious."
- PECAN
- OBSCURE SCALE (Chrysomphalus obscurus Comst.)
- Georgia O. I. Snapp (May 13). "One tree killed by this scale, and others near by badly infested in a pecan orchard at Perry. Lime-sulphur solution, 1-6, was used last winter on these trees but did not control this scale."
- BELTED CHION (Chion cinctus Drury)
- Georgia O. I. Snapp (May 17). "First adults of the season were collected near a pecan orchard on April 1 at Fort Valley. They are very injurious to pecans in this locality."
- Phylloxera sp.
- Louisiana T. H. Jones (May 10). "Galls are becoming noticeable, especially on seedlings at Baton Rouge. We have also received complaints of damage to the nuts by this insect. This is the first year we have observed galls on the developing nuts."

GRAPE

GRAPE PLUME MOTH (Cryptilus periscelidactylus Fitch)

Indiana H. F. Dietz (May 1). "The plume moth on grapes is beginning to show up in moderate numbers at New Albany and Indianapolis."

GRAPE LEAFHOPPER (Erythroneura comes Say)

Pennsylvania (Pennsylvania Crop Protection Circular). "The Pennsylvania Department of Agriculture Laboratory in the Erie grape district is encouraging the use of a trap spray for the grape leafhopper, by using a series of vertical nozzles set at different angles so as to spray two rows on the side at the same time, thus trapping the agile hoppers between two clouds of nicotine."

GRAPE FLEA-BEETLE (Haltica chalybea Ill.)

Correction: In the last number of the Survey Bulletin, page 50, the statement should read "it was abundant and eating grape buds."

West

Virginia F. E. Brooks (May 19). "This species is unusually scarce and very little injury has been done."

New York A. B. Buchholz (May 6). "This insect was observed for the first time this season on May 2 in Columbia County."

ROSE CHAFER (Macrodactylus subspinosus Fab.)

Indiana H. F. Dietz (May 23). "A bad case of the rose chafer was reported as infesting grapes at Washington, Ind."

GRAPE LEAF-ROLLER (Desmia funeralis Huebn.)

Louisiana Ed. Foster (May 17). "The larvae of this moth are quite numerous on grapevines. They seem to be of the first generation. Where no spraying or dusting was done last year, the damage from this insect was very considerable."

WHITE ANT (Reticulitermes flavipes Kol.)

Indiana J. J. Davis (May 15). "This insect has been noticed as injuring grapevines by boring into the stalk near the ground at LaFayette. They were also observed to be injuring melons in cold frames at Vincennes."

CALIFORNIA GRAPE ROOTWORM (Bromius obscurus L.)

California O. E. Bremner (May 1). "At Healdsburg, in Sonoma County, 20 per cent of the buds had been eaten by this insect. The vines have been sprayed with Bordeaux and arsenate of lead and some were dusted with arsenic-sulphur dust, 85-15. Both remedies seem to be effective."

GRAPE CURCULIO (Craponius inaequalis Say)

West Virginia F. E. Brooks (May 13). "Beetles have appeared very early in this region. At the present time they are unusually abundant on grape foliage and feeding sparingly from the upper surface of the leaves. Grape blossoms not yet open. The crop prospect has been injured seriously by late frosts, and spraying will be necessary in order to save the remaining fruit from infestation by the curculio."

GRAPE TIP-GIRDLER (Ampelogypter ater Lec.)

West Virginia F. E. Brooks (May 13). "A number of beetles have been seen on the grapevines and girdled tips are rather more abundant than for several years."

CRANBERRY

BLACKHEAD CRANBERRY WORM (Rhopobota nasvana Huebn.)

Wisconsin S. B. Fracker (May 24). "Mr. O. G. Molder reports that a large percentage of the growers in the central counties are putting on a special flood this week to control this pest. The worms are in the first and second instars and are excessively abundant."

TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- New Jersey D. E. Fink (May 12). "This insect is quite abundant on potato though eggs have not as yet been deposited."
- Maryland J. A. Hyslop (May 25). "Adults are now mating in southern Montgomery County and a few egg masses have been observed."
- Florida H. Mowry (May 9). "This insect is more abundant than usual in Duval County this year. No damage was done by this pest last year."
- Minnesota A. G. Ruggles (May 17). "First potato beetle was seen above ground May 15."
- Louisiana T. H. Jones (May 11). "Beetles from the first generation of larvae noted to be very abundant in a field at Baton Rouge where control experiments are being conducted."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New Jersey D. E. Fink (May 12). "Throughout the potato-growing section of the southern part of the State this insect is found in abundance and the usual amount of injury is noticeable. Tomato plants that are being set out on this date are severely attacked, except where precautions have been taken to spray the plants before setting out."
- Missouri A. C. Burrill (May 12). "This insect is very abundant on deadly nightshades in orchards about Keytesville."

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

- New Jersey D. E. Fink (May 12). "Lima and string beans show injury from 20 to 30 per cent of the crop. Potato fields show injury from 5 to 45 per cent. The greatest injury to potatoes occurs only in fields on light sandy loam. The unusual dry spring this season has greatly mitigated what started out to be a severe infestation from this pest."

POTATO APHID (Macrosiphum solanifolii Ashm.)

- New Jersey D. E. Fink (May 12). "Winged migrants of this species, as well as of Myzus persicae Sulz., were observed on potatoes. As yet they seem scarce."
- Delaware C. O. Houghton (May 1). "This species has appeared in its usual numbers upon rose bushes at Newark."

Tennessee S. Markovitch (May 15). "I found the pink and green aphid very abundant around Knoxville on early tomatoes last week."

POTATO LEAFHOPPER (Empoasca mali LeB.)

Louisiana T. H. Jones (May 13). "Dr. C. W. Edgerton, station plant pathologist, recently reports seeing fields at Hammond and Baton Rouge badly injured by what seems to be typical hopper-burn. This species of hopper was present on the plants in rather small numbers."

TOMATO WORM (Protoparce sexta Johan.)

Illinois C. C. Compton. "The pupae of the tomato worm are numerous and general in truck-garden sections about Aurora and Chicago. This pest caused considerable loss to growers last season and bids fair to be destructive again this season."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana T. H. Jones (May 13). "This bug still continues doing injury in the field, especially to Irish potatoes. Nymphs received on May 4 from Bowie and today from St. Francisville accompanied letters telling of injury."

BRASSY FLEA-BEETLE (Chaetocnema pulicaria Melsh.)

Maryland J. A. Hyslop (May 10). "Flea-beetles are unusually destructive in the eastern part of Montgomery County. Early tomatoes and eggplant are being badly damaged."

Indiana J. J. Davis (May 22). "We had numerous reports of injury during the past week or so to tomato plants by the brassy flea-beetle."

A BLISTER BEETLE (Epicauta lemniscata Fab.)

Florida H. Mowry (May 9). "This blister beetle has been observed for the first time this year where it is damaging about 50 per cent of the plants of Irish potatoes and Okra about Jacksonville."

CABBAGE

CABBAGE APHID (Brevicoryne brassicae L.)

Connecticut M. P. Zappe (May 23). "Aphids are just beginning to show on early cabbages set May 11. They were abundant in the Mt. Carmel section last season."

New Jersey D. E. Fink (May 20). "There seems to be a scarcity of this species on cabbage. I have as yet failed to locate a single specimen, although many cabbage fields have been examined."

HARLEQUIN BUG (Murgantia histrionica Hahn)

Arkansas Dwight Isoby (April 29). "Harlequin bug noted at Van Buren April 19 and Fayetteville April 24."

WIREWORMS (Elateridae)

New Jersey D. E. Fink (May 19). "Wireworms were observed attacking lima beans, seed potatoes, and cabbage; they were most numerous in a cabbage field. A half dozen specimens could easily be obtained with each trowel full of soil. They were doing considerable damage to seedling cabbage, and lima bean seeds were entirely ruined where attacked."

STRAWBERRY

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

New Jersey D. E. Fink (May 12). "Adults have been observed in strawberry fields for the past several weeks. Eggs are now being laid."

Missouri A. C. Burrill (May 4). "The first specimens were observed this year on this date."

Kanana G. A. Dean (May 15). "The strawberry leaf-roller was rather common last year over the entire eastern half of the State, and a few reports are now coming in of it doing some injury to strawberries."

STRAWBERRY WEEVIL (Anthonomus signatus Say)

New York C. R. Crosby and assistants. "By May 6 the weevil had appeared in Ulster County, and control measures will be started May 9."

New Jersey D. E. Fink (May 12). "The weevil is not doing nearly as much damage as in previous seasons."

Minnesota A. G. Ruggles (May 17). "The strawberry weevil seems to be quite abundant this year, particularly in old strawberry patches. Our strawberries started to bloom about May 10."

Arkansas Dwight Isoby (April 29). "The strawberry weevil is generally distributed in the vicinity of Fayetteville and Mulberry. Injury in most instances is not of economic importance this year."

EARLY STRAWBERRY SLUG (Empria fragariae Rohwer)

Nebraska M. H. Swenk (April 15). "Reports of injury to strawberry plants by the early strawberry slug began to be received May 6."

SPOTTED CUTWORM (Agrotis c. nigrum L.)

Connecticut D. H. Walden (April 13). "Adults emerged May 21. Some larvae collected feeding on leaves instead of cutting the stems in New Haven County."

A NITIDULID (Heterostomus pulicarius L.)

New York E. P. Felt (May 24). "A small black beetle has been somewhat injurious to recently opened strawberry blossoms in southern Columbia County. The beetles work at the very base of the young blossoms and produce a small blackened area due to their feeding upon the developing anthers and adjacent tissue. Injured blossoms may produce 'nubbins' or be entirely blasted, and in one bed the insect was producing an appreciable amount of injury, though not as serious as that caused by the strawberry weevil. This insect also appears to be present in Saratoga, Niagara, Schoharie, and parts of Albany Counties."

ASPARAGUS

ASPARAGUS BEETLES (Crioceris asparagi L. and C. 12-punctata L.)

Massachusetts H. T. Fernald (May 16). "The first specimens of both species observed on this date at Amherst."

New York C. R. Crosby and assistants. "Adults were first observed in Nassau County on May 10."

Delaware C. O. Houghton (May 10). "The common asparagus beetle is more common than usual at Newark. The first specimen of the 12-spotted beetle was observed on this date. They are much less numerous than the common asparagus beetle."

Maryland J. A. Hyslop (May 1). "The first adult of the season observed today in southeastern Montgomery County." (May 14). "Adults are now swarming in asparagus plantations and stems are literally covered with the eggs. Many half grown larvae are also present. On this date the first specimen of the 12-spotted beetle was observed."

Wisconsin S. B. Fracker (May 16). "Mr. G. C. Christensen reports the common asparagus beetle from Oshkosh, where it is said to be a new enemy of asparagus."

Oregon A. L. Lovett (May 10). "Adults observed and eggs found on May 12. This common asparagus beetle seems to be increasing in the section about Corvallis."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

New Mexico F. H. Chittenden (Monthly Letter Bureau of Entomology No. 96). "Mr. J. E. Graf, reports that in the Estancia Valley in New Mexico hibernating beetles were found several miles from any previous bean plantings and high in the hills in the partially wooded sections of the Valley. It is apparent that hibernating in woodlands is characteristic of this beetle. Evidently a certain amount of woodland is necessary to provide suitable hibernating quarters and the beetles have failed to hibernate successfully when extending their range eastward from the Rocky Mountain foothills. In the East, which is comparatively heavily wooded, no limitation of this nature will prevail and the beetle will probably be able to extend its range over the entire territory east of the Mississippi River."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Arkansas Dwight Isaly (April 27). "The first record of this beetle made today. Leaves stripped locally in a few instances." (May 22). "Bean leaf beetle is causing local injury to string beans in the vicinity of Fayetteville, Siloam Springs, and Van Buren."

PEAS

PEA-APHID (Illinoia pisi Kalt.)

New Jersey D. E. Fink (May 12). "Peas unusually free from attack of this species at the present time." (May 20). "The pea aphid is becoming noticeable. It is possible that severe injury may not occur before the crop is ready to be harvested, since in most fields the pods are already formed."

Delaware J. F. Adams (May). "Serious injury by this species is reported from several localities in southern Delaware."

California Victor Duran (May 5). "On April 27 in the San Joaquin Valley, vines were found to be infested almost solely by alate females, there being comparatively few young. By May 5 the young were more abundant and many apterous females had developed. In some fields the infestation would average about 10 or 15 alate adults to a foot of row, while in one field there were fully 300 in this space. The fields are scattered and small, the average acreage for each grower being about 15 acres. Much alfalfa is grown in the locality, and the greater part of this was cut between April 15 and 30. Aphids in all stages were found on alfalfa, and in view of this fact, the abundance of alate individuals on the peas, the comparatively small number of young seen on the vines, and the healthy conditions of the plants supporting large numbers of aphids,

it seems evident that a migration of this insect from alfalfa to peas had just taken place. In this region there is a total acreage in peas of approximately 1,000 acres."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Ohio T. H. Parks (May 20). "Quite troublesome on melons in the southern and central counties. The gypsum-arsenate of lime mixture (one part of arsenate of lime to 20 parts of gypsum by weight) is giving good results where applied at frequent intervals to repel the beetles."
- Indiana J. J. Davis (May 15). "The striped cucumber beetle is common as usual in the melon section of the southwestern part of Indiana. They first made their appearance at Vincennes about the first of May. From a general survey at Decker near Vincennes, apparently the striped beetles are not as abundant near the river where the overflow covered the ground, but farther back from the river they are in conspicuous numbers. It seems that the overflow destroyed many of the beetles hibernating along the river."
- Missouri L. Haseman (May 10). "This beetle is worse than usual for this season of the year and has already been reported as ruining early melon crops in Boone County."
- Arkansas Dwight Isley (May 22). "The striped cucumber beetle is causing severe injury to canteloupes in the vicinity of Van Buren. Percentage of hills killed in commercial fields ranges from 20 to 100."
- Louisiana T. H. Jones (May 11). "Mr. C. E. Smith of the Bureau of Entomology reported the first finding of beetles in field of Baton Rouge today."
- New Mexico R. Middlebrook (April 7). "This beetle appeared ten days earlier than usual this year, first being observed on March 15, in the Mesilla Valley."

FLORIDA FLOWER THRIPS (Frankliniella bispinosus projectus Watson)

- Florida K. C. Moore (May 10). "Melons and canteloupes did not set more than one-quarter of a crop in many localities throughout Marion County on account of thrips."

COTTON APHID (Aphis gossypii Glov.)

- Kansas G. A. Dean (May 15). "This insect is just beginning to appear around Manhattan and undoubtedly will soon appear over the entire State."

ONION

ONION THRIPS (Thrips tabaci Lind.)

Louisiana T. H. Jones (May 4). "Judging from recent reports onion thrips caused considerable damage in southern Louisiana this year. Badly injured plants were sent in from Bowie on May 1, and what is without doubt this insect was reported to be "playing havoc" with the onion crop in Terre Bonne Parish. District extension agent for southern Louisiana also reports that severe injury was general this spring over southern Louisiana."

WHEAT WIREWORM (Agriotes mancus Say)

New York C. R. Crosby (May 16). "Wireworms are reported as attacking onions and lettuce at Elba."

HORSERADISH

HORSERADISH FLEA-BEETLE (Phyllotreta armoraciae Koch)

Massachusetts H. T. Fernald (May 20). "This insect was observed at Amherst this year. It is the first record that I know of for Massachusetts."

SPINACH

GREEN PEACH APHID (Myzus persicae Sulz.)

California R. E. Campbell (May 1). "The entire acreage grown on the Pala Indian Reservation in San Diego County was infested but spraying was begun in time and most of the damage was avoided. Predators were negligible in this outbreak but Empusa aphidis was destroying from 25 to 50 per cent of the aphids in some fields."

S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

Cotton Belt. B. R. Coad (May 24). "Reports received from Sumter and other points in South Carolina, Sherman, Tex., southeastern Oklahoma, Georgia, and Mississippi indicate the presence of an unusually large number of weevils on small cotton for this time of year. This is the first season that weevils have been reported in large numbers this early as far north as Clarksdale in the Mississippi Delta. In the vicinity of Tallulah, La., examinations show the weevils to be more numerous on small cotton at this time than in any previous year of which we have record and far more numerous than any average years."

SUGAR-CANE

SUGAR-CANE BEETLE (Euetheola rugiceps Lec.)

Louisiana T. E. Holloway (May 23). "A search in rice, corn, and sugar-cane fields at various points in southern Louisiana has been made for the sugar-cane beetle but very few of the beetles have been found. They are doing some damage near Franklin but, in general, they seem to be scarce."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana T. E. Holloway (May 23). "The sugar cane moth borer has appeared very early this spring after a mild winter. It is about a month earlier than usual, a second-instar larva having been found on April 18. This corresponds with conditions last year when borers showed up in the middle of April, the winter of 1920-21 not being at all severe."

ANOMALA (Anomala orientalis Waterh.)

Connecticut W. E. Britton (May 24). "Two or three specimens of this beetle were first collected on grass and weeds among pines in a nursery at New Haven in July, 1920, by Messrs. Walden and Zappe. The beetle was again taken in 1921 in the same place but only a few specimens. I have just been able to get the species determined. It is said to injure sugar-cane in Hawaii and may prove to be a serious pest. The beetles were identified at the British Museum."

F O R R E S T A N D S H A D E - T R E E I N S E C T S

PERIODICAL CICADA (Tibicina septendecim L.)

- Wisconsin S. B. Fracker. "A nymph possibly of the 1922 brood of the periodical cicada was collected at Leigh, about May 1. This is over 100 miles from the known distribution of this brood. Specimen sent to Bureau of Entomology for verification." (Mr. W. L. McAtee, U. S. Biological Survey, determined the nymph as Cicada septendecim L. but probably of a later brood.)
- Ohio H. A. Gossard (May 26). "A considerable tract of park forest with trees of all sizes and much undergrowth was dusted by aeroplane this week, the work being done cooperatively by the Experiment Station, the city park department of Cleveland and McCook Aviation Field. The woods were infested with canker-~~worms~~. Under very difficult conditions the work was successfully done and the distribution of the poison was excellent on woods and undergrowth. Notwithstanding heavy rains, the killing effect on the caterpillars has been excellent. This test has satisfied all entomologists who saw the work and the results that dusting by aeroplane is a very practical method of treating forest areas and that only the details of practice yet remain to be learned."

MAPLE

Drepanaphis acerifoliae Thom.)

- Missouri A. C. Burrill (May 3). "This insect is much more abundant than usual. Most of the smaller leaves have from one to ten winged individuals."

Chaitophorus coracinus Koch)

- New York E. P. Felt (April 26). "Received today from eastern Long Island sycamore maple buds with numerous small aphids, presumably the aphids of the sycamore maple."

ELM

AMERICAN ELM SCALE (Chionaspis americana John.)

- South
Dakota H. C. Severin (April 22). "General over the eastern half of the State. This is a serious pest of elm in South Dakota."
- Nebraska K. H. Swenk (May 15). "During the period of April 15 to May 15, reports of injury to elm trees by the white elm scale were repeatedly received."

Kansas G. A. Dean (May 15). "During the last few weeks several specimens of elm twigs have reached this department badly infested with the elm scale. During the last two or three years conditions have been very favorable for this elm scale to increase. Usually it has been fairly well controlled by parasites, but the specimens reaching me this spring show scarcely any parasitism."

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

New York G. W. Herrick (April 6). "Males have already formed their cocoons and have moulted to the third instar. Females are moulting also at Ithaca."

SAN JOSE SCALE (Aspidictus perniciosus Comst.)

New York J. B. Palmer (April 18). "Young ornamental trees have been killed at Binghamton."

ELM CASE-BEARER (Coleophora limosipennella Dup.)

Connecticut G. M. Finley (May 24). "Almost every leaf on one elm tree at Hampden had one or more of the cases of this insect."

ELM LEAF-BEETLE (Galerucella luteola Muell.)

Oregon A. L. Lovett (May 19). "Adults first observed in a field in the Willamette Valley on May 9. At the present date they are swarming into the trees."

ELM BORER (Saperda tridentata Oliv.)

Nebraska M. H. Swenk (May 15). "Reports of injury to elm trees by the common elm borer were repeatedly received during the past month."

South
Dakota H. C. Severin (April 15). "General over the eastern half of the State, this being one of our most serious elm pests."

CAK

(Andricus coronus Beut.)

South Carolina
and
Tennessee E. P. Felt (May 17). "Referring to the record in the last Insect Pest Survey Bulletin regarding the abundance of Andricus coronus Beut., I received specimens early last month from Clemson College, S. C., and Chattanooga, Tenn."

(Goes tessellatus Hald.)

West
Virginia F. E. Brooks (May 19). "Numerous small white-oak saplings have been observed recently that were injured seriously by the larvae of this species boring in the trunks at the surface of the ground."

'Neoclytus conjunctus Lec.'

Oregon A. L. Lovett (April 25). "This beetle is much more numerous than has been observed in recent years about Corvallis. The adult beetles are now mating."

PINE

PINE TUBE MOTH (Eulia pinatubana Kear.)

New Jersey F. L. O'Rourke (April). "This insect was in the larval and pupal stages when observed early this spring. It evidently occasioned considerable damage last year, as from 30 to 50 per cent of the foliage was removed from some trees in Camden and Burlington Counties."

JUNIPER

JUNIPER WEBWORM (Ypsolophus marginellus Fab.)

Connecticut W. E. Britton (May 24). "The larvae of this insect webbed up many plants, living in the webs through the winter. One adult has emerged so far. Many of the plants are wholly brown, others partially so. This insect was very destructive last year at Hartford."

INSECTS OF GREENHOUSE AND ORNAMENTAL PLANTS

ORCHIDS

CATTLEYA FLY (Isosoma orchidearum Westw.)

- New York E. P. Felt (May 24). "Mr. R. E. Horsey reports that this insect has been present for several years in the Highland Park greenhouses at Rochester, and during the past winter and spring there was a bad outbreak."

PHLOX

MARCH FLIES (Bibio albipennis Say)

- New York C. R. Crosby (May 1). "This insect was very abundant at Minerva, where delphinium and phlox were grown."

CROTON

GREENHOUSE THRIPS (Heliothrips haemorrhoidalis Bouché)

- Louisiana Ed. Foster (May 17). "First instance in the writer's experience of this insect attacking crotons came under observation today. The infestation was comparatively heavy. Growers of crotons about New Orleans have been little troubled with insects of a serious character."

GLADIOLUS

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

- Louisiana Ed. Foster (May 17). "Some damage by the adults to the young shoots of gladioli were noted by the writer a couple of years ago. For the past couple of years this insect has not been plentiful in New Orleans. There is a decided increase in their numbers this year."

CANNA

LESSER CANNA LEAF-ROLLER (Nymphula cannalis Quaint.)

- Florida C. A. Weigel (May 18). "Leaf-rollers have been reported as doing serious damage to cannas at Linn Haven. Over 600 worms were collected from one canna bed."
- Louisiana Ed. Foster (May 17). "Damage to both thick and thin leaved varieties of cannas is at present very considerable. Last year the crop was practically a failure in this section, due entirely to this insect. Three plantings were made in some of the municipal beds in New Orleans and in many others the plants were cut to the crown a couple of times."

WOOD

BOX PSYLLA (Psylla buxi L.)

New Jersey Herdman West (May 16). "A number of bushes were found to be lightly infested at Elberon in Monmouth County."

BOXWOOD LEAF-MINER (Monarthropalpus buxi Labou)

New York J. B. Palmer (April 25). "Reports of severe infestation of boxwood hedges have been received from Long Island."

New Jersey Herdman West (May 16). "Some large boxwood trees quite heavily infested at Elberon, in Monmouth County."

VIBURNUM

SNOWBALL APHID (Anuraphis viburnicola Gillette)

Nebraska M. H. Swenk (May 15). "Snowball bushes everywhere are reported to be infested by an abundance of this aphid. Reports began to come in May 5 and are still being received. This is the heaviest outbreak of this aphid that we have had in the State for a number of years."

FUSCHIA

COTTON RED SPIDER (Tetranychus telarius L.)

New York C. R. Crosby (April 29). "Reports have been received of infestation of these plants in a greenhouse at Kingston."

GREENHOUSE WHITE FLY (Trialeurodes vaporariorum Westw.)

New York C. R. Crosby (April 29). "Greenhouse plants are reported as being badly infested at Kingston."

ALTHEA

COTTON APHID (Aphis gossypii Glov.)

Indiana H. F. Dietz (May 23). "We are having lots of trouble on rose of Sharon."

ACACIA.

COTTONY CUSHION SCALE (Icerva purchasi Mask.)

New York J. B. Foster (May 17). "Plants in greenhouse at Ithica seriously infested."

LILAC

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- New York C. R. Crosby and assistants report this insect as quite abundant at Syracuse, and in Orleans County.
- Delaware C. O. Houghton (May 7). "Eggs of this species are now hatching here. The accumulative excess temperature since January 1 is approximately 325 degrees."
- Indiana H. F. Dietz (May 1). "The light brown oyster-shell scale, the two-brooded form which attacks cottonwood but not apple, was hatching at Indianapolis today on lilac, red osier, and American ash. This is four days later than in 1921 and 18 days earlier than in 1920."
- Indiana J. J. Davis (April 15). "The first oyster-shell scales were observed to be hatching on dogwood and lilac at Lafayette yesterday."

MAGNOLIA

COTTONY CUSHION SCALE (Icerva purchasi Mask.)

- Louisiana T. H. Jones. "Specimen of this scale was sent in for determination from Covington. It is of interest to note that recent efforts to secure the Vedalia beetles in Baton Rouge, New Orleans, for purpose of making shipments to other sections infested by the scale have met with little success, neither the scales nor the ladybird beetles have so far been located in any considerable numbers. I know of no reason for this, other than the effectiveness of the ladybird beetles."

(Pseudococcus virgatus Ckll.)

- Louisiana Ed. Foster (May 17). "This scale is at present quite numerous on both shade and cultivated magnolias. Another coccid, Toumevella sp. is also very prevalent. The coccinellid, Hyperaspis signatus Var. binotata Say., is again proving an effective check to both species."

ROSE

ROSE APHID (Macrosiphum rosae L.)

- Georgia O. I. Snapp (May 17). "Aphids appear to be unusually abundant on roses and ornamental shrubs at Fort Valley. Nicotine sulphate has been used successfully."
- Indiana H. F. Dietz (May 23). "We are having lots of trouble with plant lice on roses this spring."

California Roy E. Campbell (May 8). "Rose aphid has been worse, affecting more plants and more buds and stems per plant than I have ever observed before. In Los Angeles County I have observed very few bushes not infested to some extent."

ROSE SLUG (Caliroa aethiops Fab.)

Kansas G. A. Dean (May 15). "This slug is now defoliating roses in the vicinity of Manhattan. Last year it was very bad over the entire eastern third of the State."

ROSE CURCULIO (Rhynchites bicolor Fab.)

Colorado W. D. Pierce (May 12). "I found this weevil to appear in early June last year at Denver."

California W. D. Pierce (May 12). "The rose weevil has appeared in abundance, attacking the buds of many cultivated varieties of rose in San Mateo. Eggs were observed on this date. This is not only the earliest record I have ever noted, but I believe the first in San Mateo County."

HOUSE HOLD INSECTS

WHITE ANT (Reticulitermes flavipes Kol. and R. virginicus Banks)

Indiana

H. F. Dietz (May 1). "During the last of March and the first of April termites were observed doing considerable damage in Indianapolis. The species involved, where specimens were examined, was Reticulitermes virginicus Banks."

(May 23). "A serious infestation of termites in a store building in Indianapolis was investigated. The floor was laid directly on cinders over the ground and the baseboards around the edge of the rooms were also in direct contact with the ground. In this case the species involved was Reticulitermes flavipes Kol."

Missouri

A. C. Burrill (May 4). "A serious infestation by white ants has been investigated in DeKalb County. Practically 10 per cent of all the woodwork on the farm was destroyed, the insects even attacking grain in wooden bins. Cement bases have been placed under some of the buildings but the ants make tunnels on the surface of the cement and enter the woodwork."

ROACHES (Periplaneta americana L. and Blattella germanica L.)

Georgia

O. I. Snapp (May 17). "Roaches are very troublesome in many houses and hotels in Fort Valley. Great quantities of groceries have been destroyed. Sodium flourid is being used, but even with this it is a difficult problem to rid the properties of these insects."

SILVERFISH (Lepisma saccharina L.)

New York

J. B. Palmer (April 8). "These insects were discovered in numbers in an attic in Batavia."

South
Dakota

H. C. Severin (April 22). "This insect is general in towns over eastern South Dakota and is becoming more serious each year."

INSECTS ATTACKING DOMESTIC ANIMALS

CATTLE

HORN FLY (Haematobia irritans L.)

- Kansas E. G. Kelly (May 8). "These insects were observed over eastern Kansas. On May 10 they were first observed at Manhattan."
- Louisiana T. H. Jones (April 29). "The horn fly is now quite abundant."

STABLE FLY (Stomoxys calcitrans L.)

- Texas F. C. Bishopp (May 22). "Stable flies have been quite annoying to live stock in the vicinity of Dallas during the past two weeks. They are rather more abundant than usual at this season, some animals being infested with from 50 to 100 flies during favorable fly periods."

SCREW WORM (Chrysomya macellaria Fab.)

- Texas F. C. Bishopp (May 22). "Although adults of this pest continued abundant in southwestern Texas screw-worm cases were not especially numerous during early May but have increased considerably since the middle of the month. At El Paso and Alpine the adults were comparatively scarce on May 11. Toward the end of the month the species became very abundant in the vicinity of Dallas."

BLACK BLOW-FLY (Phormia regina Meig.)

- Texas F. C. Bishopp (May 22). "This species had practically disappeared at Uvalde on May 13 but at Dallas it has been very abundant up to date."

HORSEFLIES (Tabanus pumilus Macq.)

- Louisiana T. H. Jones (April 25). "Mr. W. G. Bradley, assistant entomologist of the experiment station, reports Tabanus as causing considerable annoyance to stock near Amite River. Tabanus pumilus was the most numerous of the species observed."

CATTLE SCAB (Psoroptes communis Furst.)

- California (Weekly News Letter, California Dept. Agr.). "The introduction of cattle scab in Mono County, reported in the last number of the Survey Bulletin, has probably resulted in the establishment of this pest in the State. A few cattle in the Antelope Valley have been found to be affected with scab. Vats are now being constructed for the purpose of dipping infested cattle. Careful survey indicates that the establishment of an effective quarantine and consistent dipping will prevent further spread of the scab in the State."

POULTRY

TURKEY GNAT (Simulium meridionale Riley)

- Nebraska M. H. Swenk (May 15). "On May 10 a serious report of the killing of young chickens and driving to cover all mature fowls by the turkey gnat was reported from a farm along the Blue River in York County."
- Missouri A. C. Burrill (May 24). "This insect is killing both young and old chickens in Troy and Bowling Green."

INSECTS ATTACKING STORED PRODUCTS

BEAN WEEVIL (Mylabris obtectus Say)

- Massachusetts H. T. Fernald (May)1. "Many more complaints than usual have been received during May of beans infested by this weevil."
- New York C. R. Crosby and assistants. "Reports of infestations were received during April and up to the middle of May from northern New York."
- Minnesota A. G. Ruggles (May 17). "All through the spring samples of beans were sent in infested with the bean weevil. The last year or two this insect seems to have been on the increase. We have never had as many inquiries concerning this pest before."
- South
Dakota H. C. Severin (April 25). "Many letters and specimens were received during the winter and spring."

GRANARY WEEVIL (Calendra spp.)

- Indiana J. J. Davis (May 15). "Within the past month we have received two reports of bad infestations of the granary weevil in houses in different sections of the State."
- Kansas G. A. Dean (May 15). "Stored grain insects, particularly the two grain weevils and the Angoumois grain moth, are unusually abundant. During the last two years the stored grain insects have done a very large amount of damage."

CADELLE (Tenebroides mauritanicus L.)

- Maryland E. A. Back (Monthly Letter, Bureau of Entomology, April). "Dr. Back and Mr. Cotton went to Baltimore on April 25 to investigate an unusual outbreak of Tenebroides mauritanicus L."

THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

July 1, 1922

Number 4

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

THE HISTORY OF THE

REIGN OF KING CHARLES THE FIRST

IN THE YEAR 1649

BY JOHN BURNET

IN TWO VOLUMES

LONDON

Printed by J. Sturges, at the Sign of the Crown, in St. Dunstons Church-yard, near St. Dunstons Church, in the Strand.

1724

OUTSTANDING ENTOMOLOGICAL FEATURES FOR JUNE, 1922.

In eastern and southern Nebraska a Hessian fly infestation has developed which is heavy enough to menace seriously the next sowing of wheat. In Kansas the second brood is manifesting itself much more seriously than was expected. In places as high as 25 per cent of the straw has fallen. The fly was discovered this year for the first time in Cheyenne County. This extends the fly-infested territory in Kansas to the Colorado State line.

Early in the month several local green-bug outbreaks developed in southern and eastern Nebraska. In Kansas this insect has seriously damaged oats over the entire State, and all spring grain has suffered heavy losses in Colorado, especially in the Arkansas Valley.

As was to be expected from the comparatively mild winter and the infestations which developed last year, the chinch bug has put in an appearance in the north-central States. About the middle of June it was reported from southern Michigan, late in May it was observed in large numbers in South Dakota, where it appeared in damaging numbers last year for the first time in the history of the State. It has also been reported as serious for the first time in about 20 years in the southeastern corner of Iowa in Lee County. The late emergence of the bugs, in the region of heaviest infestation last year, induced them to oviposit on young corn, and as a result the infestation of this crop so early in the season has already proved very disastrous. Reports of heavy egg laying by overwintered bugs in young corn have been received from Illinois and Kansas.

The bollworm is again appearing in heavy infestations in the South and being picked up in the northern produce markets on southern raised truck.

Grasshoppers are emerging in serious numbers in the Upper Peninsula of Michigan, western Nebraska, southwestern Ohio, and quite generally over Colorado.

The alfalfa weevil has very decidedly increased in the Reno district in Nevada near the California State line, several square miles of newly infested territory having been discovered this spring.

The clover-root curculio (Sitona hispidulus Fab.) has been found seriously damaging soybeans in Illinois, Indiana, and Missouri.

The rosy apple aphid is reported as unusually numerous in the New England and Middle Atlantic States as far north as Virginia and westward to Ohio.

The apple-tree tent caterpillar is very numerous in New England and New York while farther south this pest is noticeably less numerous than usual.

The pear-leaf blister mite has appreciably increased in abundance in Oregon and in the White Salmon District of Washington. In the Yakima Valley of the latter State it was reported for the first time as an apple pest last year. It also appears to be quite serious in western Missouri.

The grape leafhopper has again appeared in serious numbers in the lake grape regions of New York, Pennsylvania, and Michigan.

The potato aphid is very seriously abundant in eastern Virginia and parts of South Carolina where the loss is estimated to be as high as 30 per cent of the crop. In the northern States it is comparatively scarce so far this season.

The potato tuber moth is reported for the first time from Mississippi this month.

The cabbage maggot is reported serious in Essex County, Mass., and in several parts of New York State. It was observed this year for the first time in the 20 years experience of the State entomologist in Colorado.

The strawberry crown-miner is becoming so serious in the important strawberry region of Tennessee that it is now difficult to get a stand on account of this pest.

The Mexican bean beetle is being reported as a serious pest from several counties in Tennessee where last year it was found with difficulty.

Damage by the boll weevil throughout the cotton belt is undoubtedly more severe than it has been in years for this time of the year.

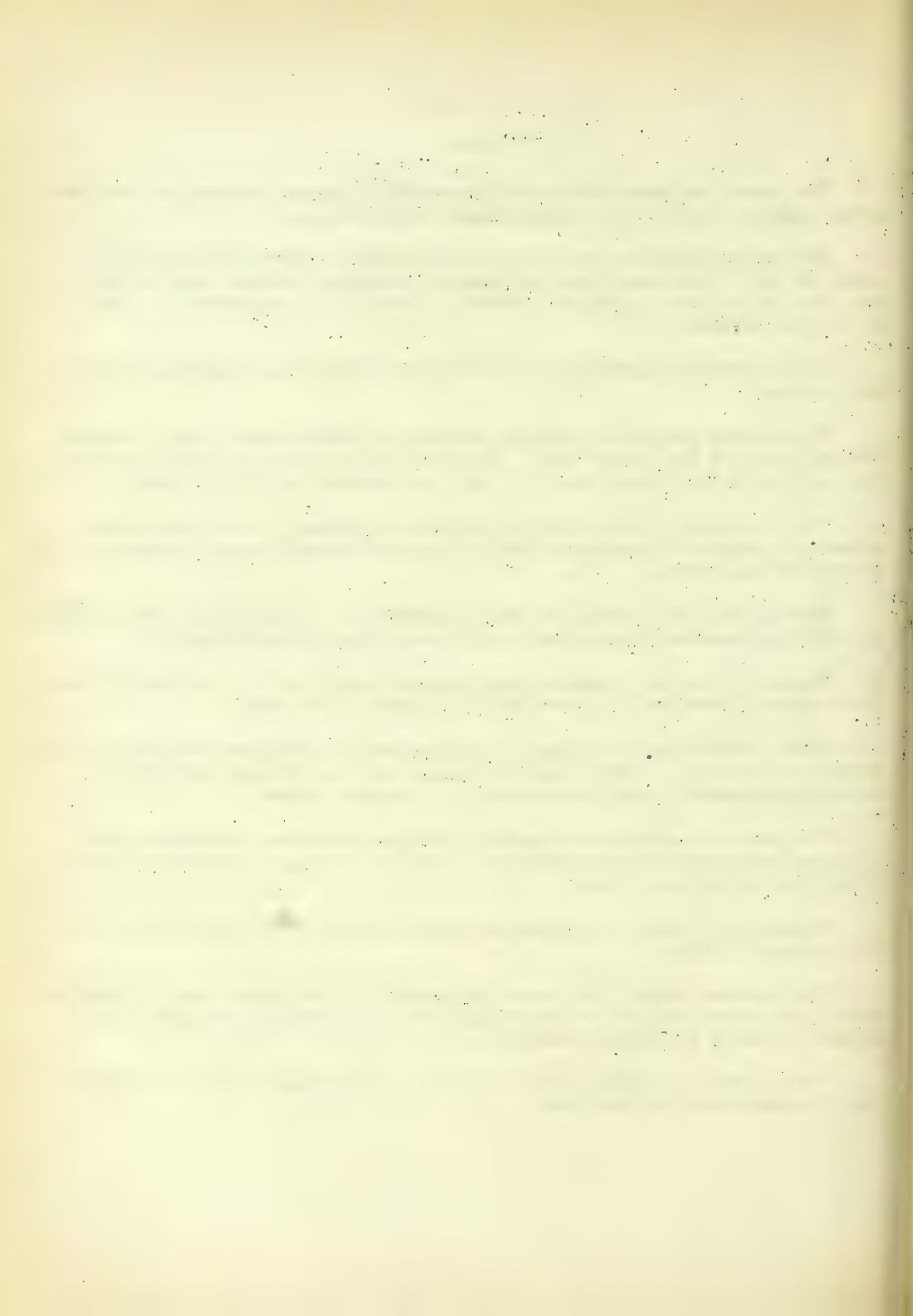
Brood XIII of the periodical cicada is well in evidence over most of its recorded territory. Brood XXI, however, is not in evidence in eastern Mississippi where it has been recorded in previous years.

The larch case-bearer is severely damaging important stands of larch in Maine, and the spruce budworm has destroyed over one-third of the matured spruce and fir in this State.

Thousands of acres of poplar are being defoliated by the forest tent caterpillar in Maine.

The European willow beetle was collected for the first time in Pennsylvania this spring and the native willow beetle is stripping willows along streams in parts of Indiana and Iowa.

The killing of young poultry by feeding on the rose-chaffer is recorded from Massachusetts and New York.



INSECT PEST SURVEY BULLETIN

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No. 4

CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

Nesbraska

M. H. Swenk (June 15). "Local losses, due to the attack of the Hessian fly, have become apparent as harvest approaches. Early in June considerable wheat in northwestern Furnas County began to show results of injury by this pest. Examination showed about 10 per cent infestation. In western Seward County much of the wheat has been injured noticeably, some cases to the extent of half the crop. Some early sown fields in southern Saunders County were going down badly by the middle of June, by which time reports of serious injury were also being received from Dodge County. The cool, backward spring has favored Hessian fly development and in many sections this pest is an actual menace to the grain to be sowed this fall."

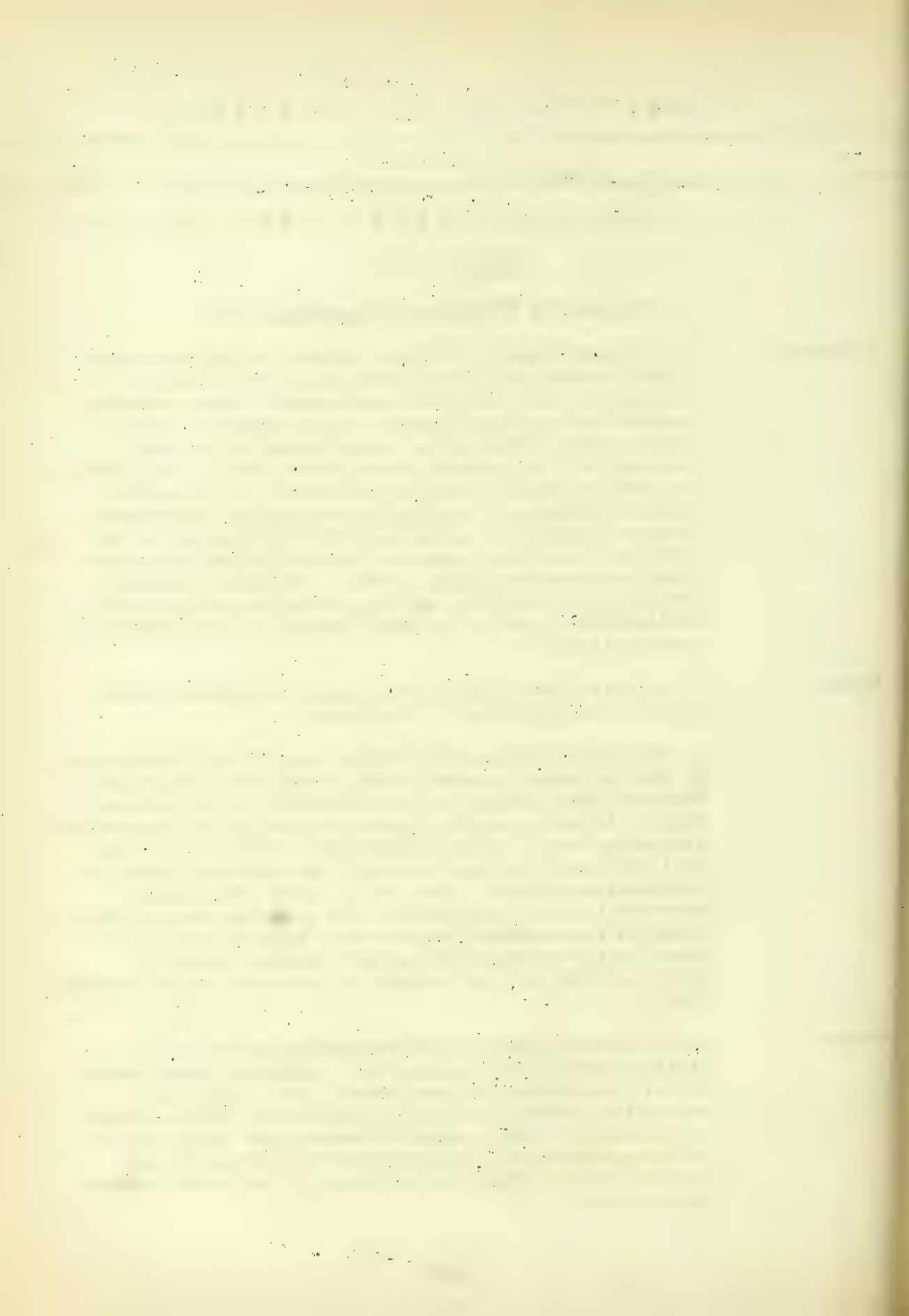
Kansas

E. G. Kelly (June 16). "A very light infestation occurs over the eastern third of the State."

J. W. McColloch (June 20). "While very little infestation by the fly could be found during early spring there has been a marked increase in the appearance of the second brood. In some cases as high as 25 per cent of the stalks are going down. It is of particular interest to note that infested wheat was received from Cheyenne County in northwestern Kansas. This is the first time the fly has been taken in this County, our previous western limit being in the northeastern corner of Logan County. This means that practically the entire acreage devoted to wheat in this State is subject to outbreaks of the Hessian fly."

Oregon

L. P. Rockwood (June 13). "Infestation severe over a limited area in the Pleasant Hill section of Lane County and at Independence in Polk County. As a rule this season the earlier sown fall wheat is less infested than late-sown fall wheat, probably because the former made better growth before the advent of the unusually long dormant season. There are no signs of the second spring brood as yet."



GREATER WHEAT-STEM MAGGOT (Meromyza americana Fitch)

- Nebraska M. H. Swenk (June 15). "The greater wheat-stem maggot has now appeared in its usual abundance this year. Injury to grass heads, in some cases up to half of the heads in a field, was reported late in May from Frontier County, and an attack on young corn plants in Thayer County was noted toward the middle of June."
- Missouri A. C. Burrill (June 15). "In Cass, Shelby, Schuyler, and Caldwell Counties this insect is now very common. I judge that the epidemic is very nearly State-wide and the infestation runs from 1 to 5 per cent."
- Kansas E. G. Kelly (June 16). "A light infestation occurs over the eastern half of the State in wheat and rye."
- Oregon L. P. Rockwood (June 13). "The spring brood of Meromyza punctifera Becker was out about May 20 in the Willamette Valley."

WHEAT MIDGE (Contarinia tritici Kirby)

- Missouri L. Haseman (June 10). "County Agent of St. Louis County reports that 30 per cent of more of the wheat is infested with the wheat midge."

GREEN BUG (Toxoptera graminum Rond.)

- Nebraska M. H. Swenk (June 15). "The cool, backward spring was probably responsible for several local outbreaks of the green bug. The first reports were received June 9 from Harlan County, five days later oat fields in Webster County were infested, and on June 10 fields in Sarpy County were found with the heads covered with green bugs."
- Kansas E. G. Kelly (May 27). "This pest has become unusually abundant during the past few weeks in southeastern and south-central Kansas. (June 5). "This pest has become very abundant on oats in the northeastern quarter of the State where the damage is estimated to be about 10 per cent." (June 20) "Oats have been damaged over the entire State."
- Colorado C. P. Gillette (June 21). "The green bug has caused heavy losses of spring grain, including wheat, oats, and barley, at least in the lower Arkansas Valley in this State and more especially in the dry farming sections in the extreme southeastern counties."



JOINTWORM (Harmolita tritici Fitch)

Illinois W. P. Flint (June 17). "Much fallen straw in wheat fields in the central part of the State, due to damage by this insect. One field showed 99 per cent infestation and many fields over 50 per cent."

PALE WESTERN CUTWORM (Porosagrotis orthogonia Morr.)

North Dakota R. L. Webster (June 20). "Damage to corn is now very evident, though this insect seems to be less serious this year than last."

CORN

CHINCH BUG (Blissus leucopterus Say)

Michigan R. H. Pettit (June 14). "I have just received a letter from County Agent at Adrian, stating that chinch bugs are doing some damage right now in barley fields. This is the first record of the year of chinch-bug work."

Indiana J. J. Davis (June 16). "Spreading abundance of this pest seems to be greatest in the northern half of the State. Probably no marked increase over last year in the southwestern corner of the State."

Illinois W. P. Flint (May 17). "Owing to lateness of bugs moving out of winter quarters and the fact that many fields at that time had a heavy growth of grass, large numbers of eggs were deposited, resulting in a heavy infestation of young corn. Many fields have already been seriously damaged. First nymphs were observed in southern Illinois May 27 and in central Illinois May 29. The pest is in sufficient numbers to cause serious damage as far north as Peoria and Adams Counties."

Iowa F. A. Fenton (June 8). "Chinch bugs have appeared for the first time in about twenty years in several places in Lee County." (June 12) "A wire from county agent in Lee County states that twelve reports of serious injury have come in. I visited this County June 6 and found chinch bugs damaging corn which was not over two inches high." (June 14) "Mr. Butcher writes from Lee County to the effect that chinch bugs are already present in corn and that there is going to be a hard fight."

South Dakota A. L. Ford and L. M. Gable (May 25). "Last year chinch bugs appeared in South Dakota in damaging numbers for the first time in the history of the State. These bugs apparently wintered successfully and at present are working in large numbers on the winter grain."



- Missouri A. C. Burrill (June 17). "The chinch bug is much less serious than usual. A heavy downfall of rain about three weeks ago seems to have wiped out an outbreak that was very threatening."
- Mississippi R. W. Harned (June 17). "More complaints than usual were received during the past two months in regard to the chinch bug. Most of these complaints, however, came from the Delta section of the State. The abundance of these insects is probably due to the fact that we had an exceedingly dry summer and fall during 1921."
- Kansas E. G. Kelly (June 16). "Eggs are now hatching. Many eggs were deposited on corn this year, which is an unusual condition in this State. Wheat cutting is now under way and bugs are moving into the corn. No serious damage has been reported as yet. However, corn is unusually small for this season of the year and damage may be expected."
- J. W. McColloch (June 20). "There is a large amount of injury to young corn and sorghum by chinch bugs throughout the eastern third of the State. This injury is rather unusual for this time of the year. The cool weather which prevailed during the early spring held chinch bugs in their winter quarters and gave wheat a heavy growth. Chinch bugs, on moving from winter quarters, settled on young corn and sorghum and in many cases have ruined entire fields. Young bugs are hatching at the present time in large numbers."
- BOLLWORM (Heliothis obsoleta Fab.)
- Massachusetts H. T. Fernald (June 22). "A larva sent in from Bittersfield, where it was found on string beans that had been shipped in from the South, was reared and proved to be the corn earworm."
- Illinois W. P. Flint (June 17). "The first adult was taken at Urbana on June 13."
- Tennessee S. Marcovitch (June 8). "Found eggs and larvae on tomatoes in several localities in western Tennessee. Some worms are already full grown and considerable injury is showing up. Several truckers are spraying and the results are being watched."
- Alabama W. E. Hinds (June 19). "The roasting earworm or cotton bollworm appears unusually abundant and damage to corn and cotton is likely to be more than usual. Tomatoes are now suffering from the attack of this species."



Mississippi

H. W. Allen (June 10). "Early corn is carrying the usual heavy infestation of worms at the tips of the ears."

ARMYWORM (Cirphis unipuncta Haw.)

Virginia

K. M. King. "First eggs found this year were laid May 21, seven days earlier than last year. First eggs parasitized by Trichogramma minutum were observed on June 1."

Illinois

W. P. Flint (June 17). "Slight outbreaks in Monroe and St. Clair Counties. Damage not serious."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana

T. H. Jones (June 17). "Severe injury was reported from Wilson on June 6 and from St. Francisville on June 7. In some instances I am told they are totally destroying whole fields. Two complaints have also recently been received from the vicinity of Baton Rouge. However, present indications are that this pest is not as serious as it was last year."

STALK BORER (Pyraipema nitela Guen.)

Connecticut

Philip Garmen (June 24). "Locally abundant at Whitneyville, in New Haven County."

Virginia

K. M. King (June 2). "This pest is very noticeably less abundant than last year."

Indiana

J. J. Davis (June 16). "The stalk borer has been reported more often than usual. Reports of injury to rye, corn, sweet potato, pepper, and tomato have been received."

Iowa

F. A. Fenton (June 20). "The stalk borer is very destructive to corn in several localities. It has been reported during the last week."

Missouri

A. C. Burrill (June 17). "Fulton, Callaway, and several other Counties reported this pest. Corn is very late and the worms are causing more apparent damage than usual."

GRAPE COLASPIS (Colaspis brunnea Fab.)

Indiana

J. J. Davis (June 16). "Grubs have been injuring corn at Connerville and Brookville. Reports coming in the first half of June were confirmed with specimens."

Illinois

W. P. Flint (June 17). "Attacking corn on fall-plowed clover sod generally over the western part of the State."

BRASSY FLEA-BEETLE (Chaetocnema pulicaria Mels.)

Virginia K. M. King (June 2). "These pests have been found in every field of young corn examined, usually several beetles to the plant. Early corn was considerably retarded but is now outgrowing the injury."

Illinois W. P. Flint (June 17). "An unknown species of flea-beetle is attacking corn in several counties, first plantings being destroyed in several cases."

Missouri A. C. Burrill (June 17). "This pest is much more serious than usual, especially in Macon County where about half the corn leaves are badly riddled."

. . . ROSE CHAFER (Macrodactylus subspinosus Fab.)

Indiana H. F. Dietz (June 19). "The rose chafer was reported from Valparaiso as damaging a 15-acre field of young corn."

. . . WIREWORMS (Elaterridae)

New York C. R. Crosby (May 29). "Larvae of Agriotes mancus Say were collected in a cornfield at East Aurora on May 21. On the same date larvae of Melanotus sp. were also found."

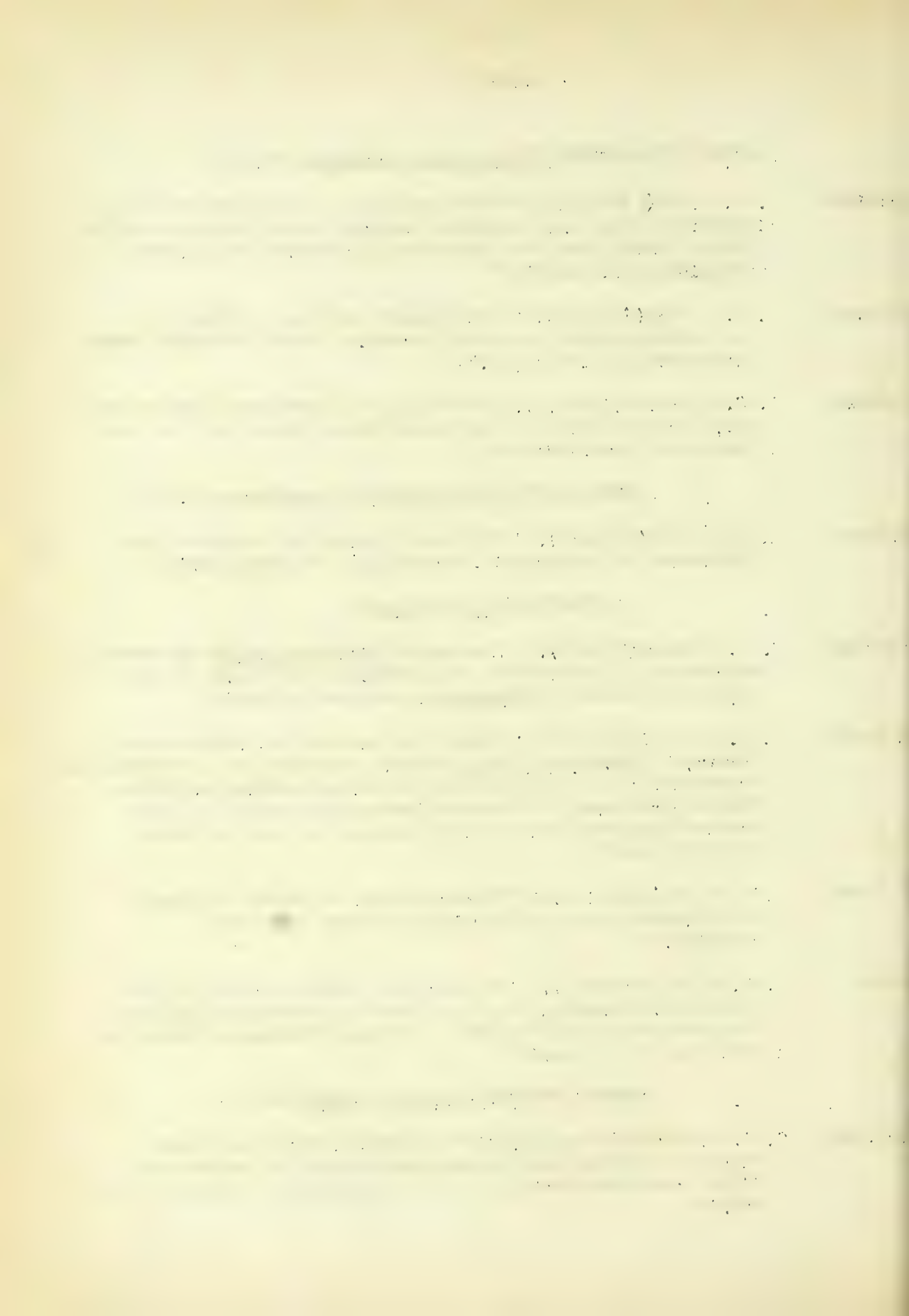
Nebraska M. H. Swenk (June 15). "Injury to corn by the upland corn wireworm, Melanotus pilosus Blatch., developed to a considerable degree under the influence of the cool, backward spring in eastern Nebraska. In Madison County both early and late planted corn were considerably damaged by this wireworm by early June."

Missouri L. Haseman (June 13). "Wireworms were reported as doing more serious damage than usual at Tipton and other localities."

Kansas E. H. Kelly (June 16). "A very poor stand of corn, due to attack by wireworms, has been observed at many places over the eastern half of the State. Corn is unusually small for this time of the year."

. . . MORMON CRICKET (Anabrus simplex Hald.)

Colorado C. P. Gillette (June 21). "The Mormon cricket has been reported to be present in alarming numbers in portions of Moffat and Routt Counties in the northwestern corner of the State."



TWO-STRIPED GRASSHOPPER (Melanoplus bivittatus Say)

Nebraska

M. H. Swenk (June 15). "Grasshoppers began hatching in western Nebraska during the last week in May and have continued hatching numerous in many localities. By this time they are mostly hatched and the larger ones about one-third grown. So far they have been most threatening to crops in Scottsbluff, Morrill, and Sheridan Counties where active preparations are being made to fight them."

RED-LEGGED GRASSHOPPER (Melanoplus femoratus Burm.)

Michigan

R. H. Pettit (June 8). "Grasshoppers were appearing in the upper peninsula in enormous numbers. I have reason to believe they are Melanoplus femoratus."

CLEAR-WINGED GRASSHOPPER (Camnula pellucida Scudd.)

Oregon

B. B. Fulton (June 8). "All stages of grasshoppers are now present at Tule Lake in Klamath County, even a few adults. They are hatching in the strips of tule and moving into the grain crops, devouring every blade as they go." (June 10) "At Fort Klamath eggs are just hatching in small areas which are several inches higher than the general level. Many of the spots are still surrounded by water. Within these small areas the hoppers are thick enough to darken the ground."

GRASSHOPPERS (Undetermined sp.)

Iowa

F. D. Butcher (June 15). "Grasshoppers were found on May 20 in Cass and Montgomery Counties in sufficient numbers to warrant their being watched closely."

Colorado

C. P. Gillette (June 21). "A large number of complaints of grasshopper injuries are coming in from both irrigated and grazing areas in the State. The Department is putting out a concentrated grasshopper poison in which crude arsenic is used with banana oil in place of lemons or oranges, which is meeting with good success and for which we are having a large call."

EUROPEAN CORN-BORER (Pyrausta nubilalis Huebn.)

Massachusetts

H. A. Mostrom (June 10). "Many larvae wintered over in stubble. Eggs were in abundance on the under side of dock leaves during the latter half of May. There is every indication that the serious damage of last year will be repeated this season."

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GREASY CUTWORM (Agrotis ypsilon Rott.)

Illinois W. P. Flint (June 17). "Causing severe damage along many bottom lands which were overflowed earlier in the season. Owing to its subterranean feeding habits, poisoned bran mash is not effective in its control."

. . . WEBWORMS (Crambus spp.)

New York C. R. Crosby. "Adults of the silver-striped webworm Crambus praefectellus Zinck. were collected at trap lantern on May 26 and 31."

Minnesota A. G. Ruggles (June 13). "In Olmstead County we seem to have an outbreak of the corn rootworm. We have not worked out the species of Crambus as yet."

ALFALFA

. . . ALFALFA WEEVILZ (Phytonomus pisticus Gyll.)

Nevada C. W. Creel (June 17). "This insect has very decidedly increased in the Reno district. At this date the majority are in the advanced larval stage and a few are pupating. The survey conducted cooperatively by the Nevada Quarantine Office and the Nevada Extension Service shows that the infested area has increased several square miles since last year. The insect is now present in the alfalfa fields from a point $1\frac{1}{2}$ miles west of Reno to a point 20 miles east of the City. All fields in the Truckee Valley north of Reno as well as all fields to a point 3 miles south of Reno are infested." (June 20) "The infestation in White Pine County appears twice as severe as last year. I believe that general spraying will be necessary by 1924 in order to save the first crop. The majority of the insects in the Snake Valley are now in the advanced larval stage. Many cocoons and a few fresh adults are to be observed."

CLOVER

. . . PEA APHID (Illinoia pisi Kalt.)

Wisconsin S. B. Fracker (May 16). "This insect was still abundant in clover fields at Green Bay on this date. Migration to adjoining pea fields had begun."

Missouri A. C. Burrill (June 15). "First adults found on red clover were observed on this date at East Petrie."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

Ohio T. H. Parks (June 12). "While this insect has been present in Ohio for a decade it has been a serious pest to red clover only recently. Serious damage started in Van Wert County in 1918. In 1919 Shelby and Miami Counties suffered. In 1920 it had affected five or six counties in western Ohio. In 1921 it had extended eastward to the central counties and this year the damage is still spreading eastward, the seriously infested area now extending from the northeastern border of the State southward to a line running along the northern border of Preble County to the northern border of Pickaway County and eastward to the eastern border of Franklin County to the eastern border of Erie County."

Illinois W. P. Flint (June 17). "Damage by this pest is not as severe as in 1921 but is quite general over the entire State."

Oregon E. P. Rockwood (June 13). "Found as far south as Albany on the east banks of the Willamette River. This point is as far south as the species has been found. It is more numerous than last year at Forest Grove but the parasite Bathylabus exigua Grav. is much in evidence."

CLOVER -SEED MIDGE (Dasynura leguminicola Lintn.)

Oregon L. P. Rockwood (June 13). "First larva showing the pink tinge was found on June 6 at Forest Grove. Infestation about normal in the first crop of clover heads. Serious injury to the seed crop not anticipated."

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

Kansas E. G. Kelly (June 6). "Considerable damage was done early in the spring over the eastern half of the State."

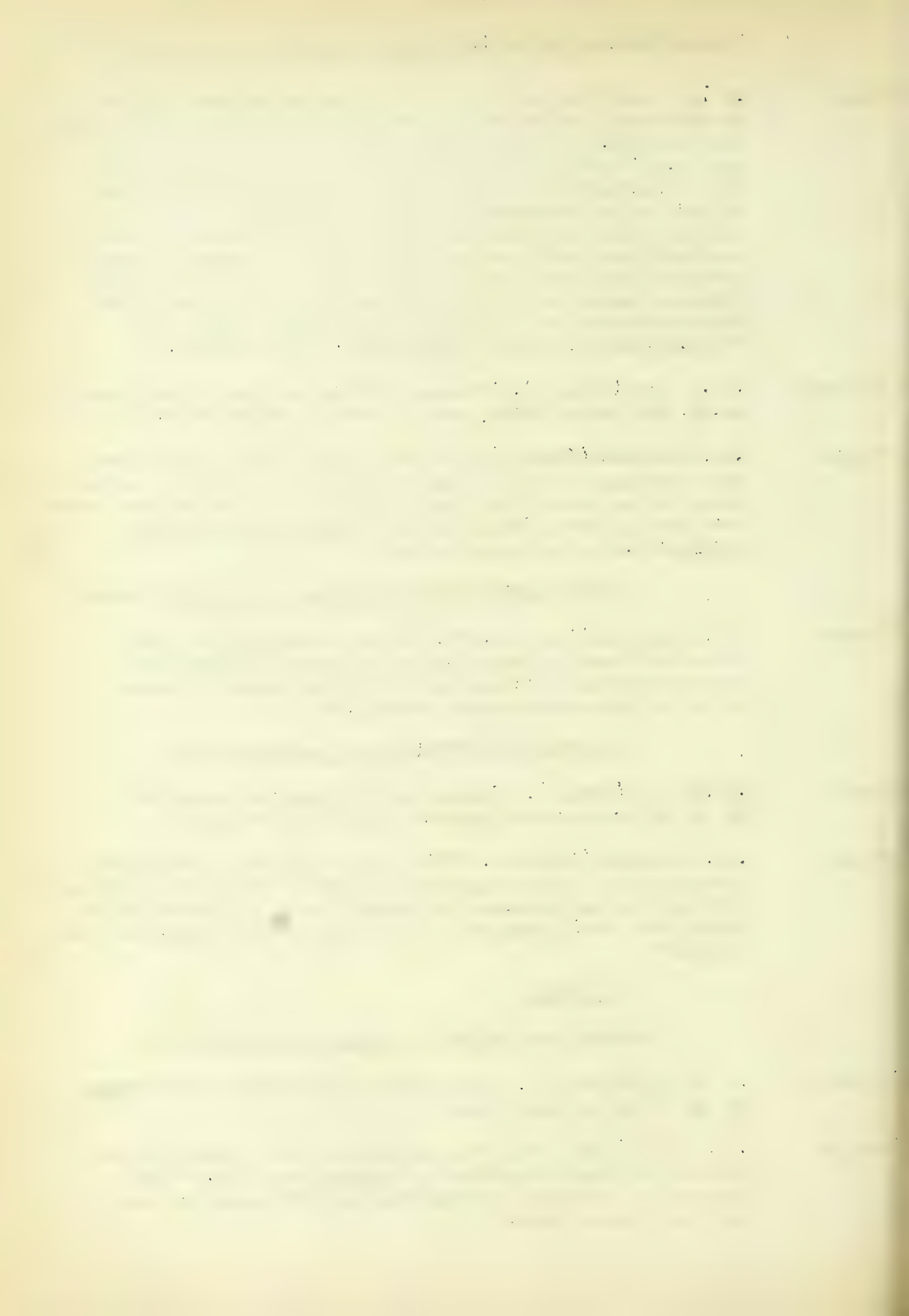
Oregon L. P. Rockwood (June 13). "This insect has been a negligible factor this season, on account of unusual winter conditions, as this species has acquired the habit of wintering over in the adult stage and laying most of its eggs in the spring, in this region."

SOY BEAN

CLOVER-ROOT CURCULIO (Sitona hispidulus Fab.)

Illinois W. P. Flint (June 17). "This insect is causing severe injury to soy beans on clover sod."

Indiana J. J. Davis (June 27). "This insect has been reported from Clinton and Howard Counties as injuring soy beans. Last year it was reported as doing considerable damage to this crop in Clinton County."



Missouri

A. C. Burrill (June 16). "This insect has riddled 60 per cent of the leaves of soy beans grown in corn following blue-grass sod in Shelby County."

SORGHUM

SORGHUM WEBWORM (Calana sorghiella Riley)

Illinois

S. C. Chandler (June 3). "This insect is found in all rye fields in some parts of southern Illinois where from two to eight larvae are found to the head, 40 to 60 per cent of which are infested. The damage is very severe."

Missouri

A. C. Burrill (June 10). "Volunteer rye at Gordonville and Jackson is very seriously infested, 90 per cent of the heads containing larvae."

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeG.)

- Massachusetts H. T. Fernald (June 22). "This insect, which has not been abundant thus far, is now increasing in numbers."
- New York C. R. Crosby and assistants. "These insects are now appearing in numbers in Nassau, Orleans, Chautauqua, and Columbia Counties. There is a possibility of a late infestation by this aphid."
- Indiana J. J. Davis (June 16). "The green apple aphid has been frequently reported in unusual abundance the last few weeks."
- Minnesota A. G. Ruggles (June 13). "We have found the green apple aphid doing considerable damage to apple trees in Washington County."
- Missouri A. C. Burrill (June 15). "This insect is increasingly abundant in Caldwell County."

ROSY APPLE APHID (Anuraphis roseus Baker)

- Massachusetts H. A. Mostrom (June 10). "Apple aphids are on the increase in Essex County."
- H. T. Fernald (June 22). "The rosy apple aphid appeared in small numbers. During recent years it has been quite scarce in this region."
- Connecticut M. P. Zappe (June 24). "A very serious outbreak developed during May and early June in New Haven County."
- New York C. R. Crosby and assistants. "The rosy apple aphid is appearing in rather large numbers in Chautauqua, Genesee, Wayne, Orange, Onondaga, Columbia, and Ulster Counties, where under favorable conditions it may produce serious injury. It is also present in small numbers in Greene County."
- New Jersey M. D. Leonard (June 8). "Quite abundant at Pompton, especially on the leaves and terminal shoots, although the trees had received thorough dormant spraying."
- Virginia W. J. Schoene (June 3). "We have received a number of reports of a very serious infestation of the rosy apple aphid in northern Virginia during the past few weeks."
- Oio H. A. Gossard (May 26). "The rosy apple aphid has been received several times."

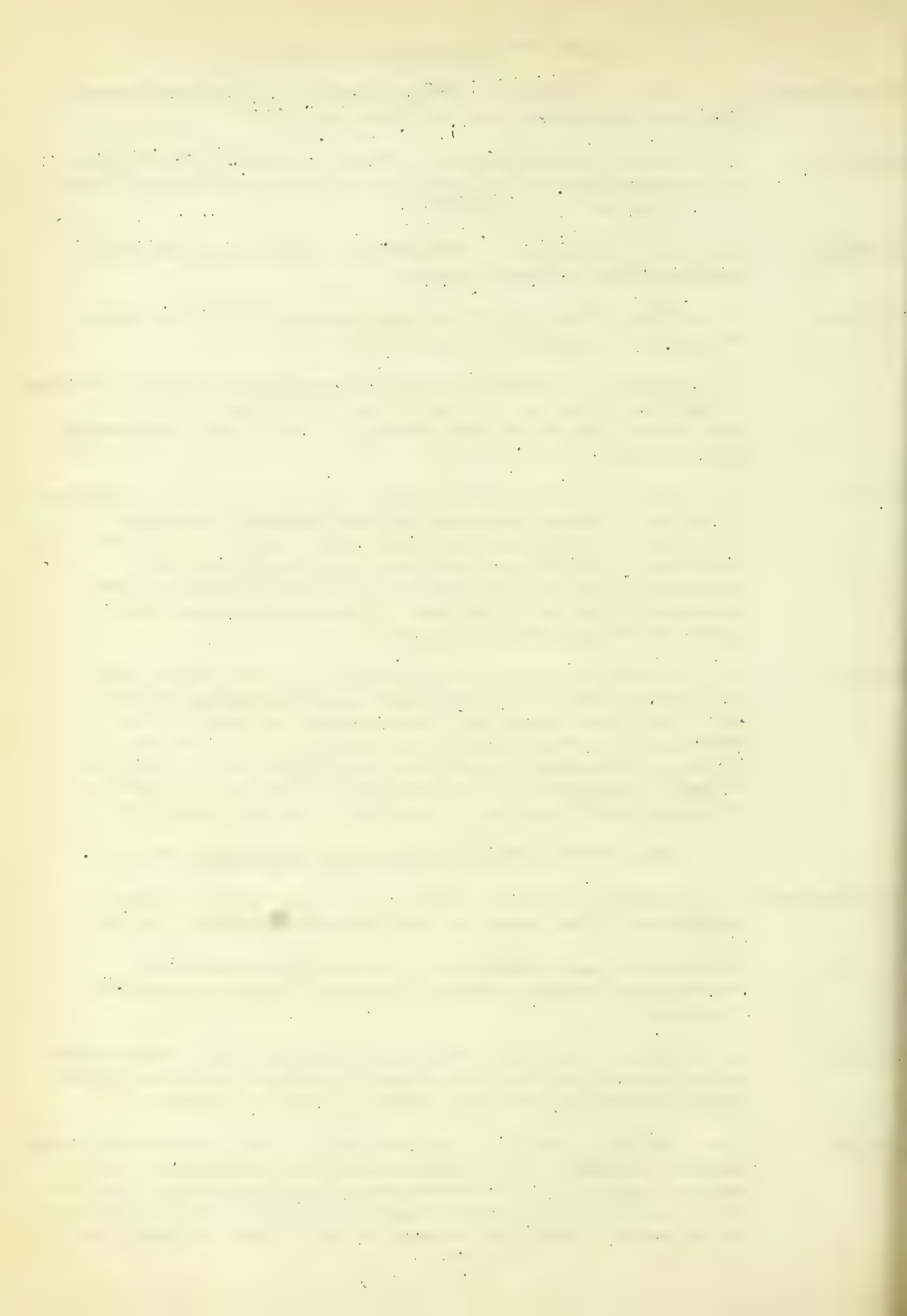


CODLING MOTH (Carpocapsa pomonella L.)

- Massachusetts H. A. Mostrom (June 10). "Very little damage by this insect has been observed to date in Essex County."
- New York C. R. Crosby and assistants. "From the first to the middle of the month the codling moth was pupating in Columbia, Wayne, Monroe, and Orleans Counties."
- Indiana J. J. Davis (June 16). "The codling moth is apparently less abundant than in former seasons."
- Illinois W. P. Flint (June 17). "The first pupa of the second brood was taken in southern Illinois yesterday."
- C. P. Compton. "The first codling moth pupated in the insectary at Aurora on May 1. On May 20 the first adult emerged; 30 per cent of the adults had emerged by May 27, and practically all by June 1."
- Kansas E. G. Kelly (May 26). "The first-brood eggs are just beginning to hatch. Sprayed orchards are not seriously attacked. (June 16). In the Arkansas River Valley district they are much more abundant than last year; unsprayed fruit was pp practically 100 per cent damaged, while good spraying gave a control of 90 to 95 per cent. The northeastern Kansas district was not heavily infested."
- Oregon A. L. Lovett (June 14). "At Medford the first adults were observed on May 12, and eggs have been abundant since the 20th; the first larva was observed here on June 2. At Corvallis the first pupa was observed on May 22, and the first adult on June 1; eggs were very scarce up to June 14. At Hood River eggs were very generally deposited by June 14. A careful survey indicates about a 25 per cent hold over."

FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walk.)

- Massachusetts H. A. Mostrom (June 10). "This insect has rolled a large proportion of the leaves in some orchards in Essex County."
- New York C. R. Crosby and assistants. "Leaf-rollers are quite abundant in Genesee, Orleans, Rockland, Wayne, and Onondaga Counties."
- Michigan R. H. Pettit (June 14). "The apple leaf-roller is reported as being present in Eaton County and it seems to be spreading over the State and becoming more numerous than ever before."
- Oregon Leroy Childs (June 9). "This insect is doing considerable damage in many orchards. Experiments were made this spring with regular, double, and triple strength lead arsenate applied with large outfits equipped with coarse nozzles and using a pressure of 325 to 350 pounds; an average of 11½ gallons of spray was



used on 15-year-old trees. The spray was applied in both pink and calyx applications. Fair control where double and triple strengths were used; practically none where the ordinary strength was applied. This pest was much more serious in orchards not receiving an application of oil spray."

BUD MOTH (Tmetocera ocellana Schiff.)✓

New York E. P. Felt (May 24). "Bud moths appeared in only very moderate numbers in eastern New York."

C. R. Crosby and assistants. "Many orchards seriously injured in Genesee, Orleans, and Monroe Counties."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)✓

Connecticut B. A. Porter (June 14). "Larvae of the first brood have completed feeding at Wallingford. Moths began to emerge in small numbers on June 7."

M. P. Zappe (June 24). "First-brood larvae have matured and adults have been flying about New Haven and Fairfield."

New York E. P. Felt (June 23). "A marked extension of the infested area in New York State indicated by specimens received early in June from Ulster Park, Ulster County, there being a general infestation in one orchard at that place."

TENT CATERPILLAR (Malacosoma americana Fab.)✓

Massachusetts H. T. Fernald (June 22). "An unusual abundance of tent-caterpillar nests appeared this year on Cape Cod."

H. A. Mostrom (June 10). "This insect is very abundant in Essex County. The wilt disease, however, has materially checked the infestation."

Connecticut W. E. Britton (June 24). "This insect is considerably more abundant than last year in New Haven, Fairfield, Middlesex, Hartford, Tolland, and Windham Counties."

New York C. R. Crosby and assistants. "Unusually abundant in orchards in Rockland County, and observed in unsprayed orchards in Seneca County."

E. P. Felt (May 24). "This insect appears to be abundant in parts of Ulster and Putnam Counties. It is also decidedly on the increase in Chenango County."

West Virginia F. E. Brooks (May 19). "This insect is unusually scarce this year, only one tent having been observed this spring."

Missouri A. C. Burrill (June 8). "This insect is appearing quite numerous along the Mississippi River bottom lands in Cape Girardeau County."

SPRING CANKERWORM (Paleacrita vernata Peck)✓

- New York E. P. Felt (May 24). "Cankerworms were extremely abundant in one orchard which was defoliated by them last year at Skaneateles in Onondaga County."
- C. R. Crosby and assistants. "Quite abundant in Genesee, Seneca, Orleans, and Monroe Counties. The outbreak is associated with that of the fall cankerworm."
- Iowa F. D. Butcher (June 15). "Cankerworms are appearing in Wapello and Mahaska Counties."

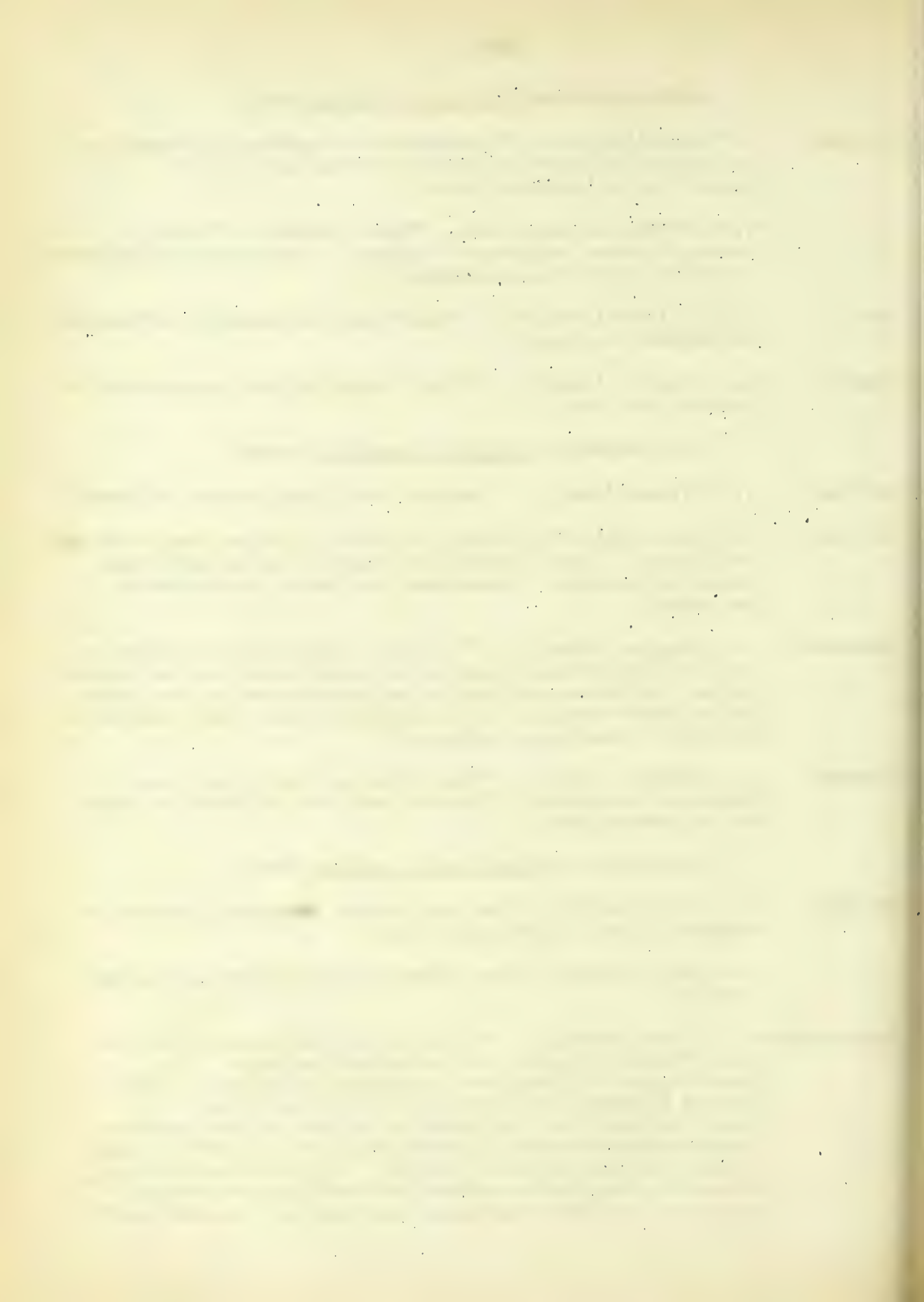
- Missouri A. C. Burrill (June 8). "A very slight infestation appeared at Jackson this year."

FALL CANKERWORM (Alsophila pometaria Harris)✓

- New York J. B. Palmer (June 1). "Abundant in a young orchard at Ithaca."
- New Jersey R. B. Lott (May 27). "About 100 acres at Mendham were practically defoliated. Larvae are now almost mature and no additional damage is expected. Cankerworms are rarely troublesome in New Jersey."
- Minnesota A. G. Ruggles (June 13). "The fall cankerworm has not been as bad in the Minnetonka region as in former years, but has spread to the Twin Cities and 'way to the southern part of the State. In the latter area most of the complaints came from orchardists who had not done proper spraying."
- Missouri A. C. Burrill (June 2). "Some trees in Gentry County were completely defoliated. Insects have left the trees to pupate by the present date."

APPLE RED BUG (Heterocordylus malinus Reut.)✓

- New York E. P. Felt (May 24). "Red bugs are not noticeably abundant in southern Columbia County this year."
- D. D. Ward (May 20). "One orchard badly infested in Onondaga County."
- Pennsylvania S. W. Frost (June 14). "We have been using nicotine dust in Adams County with great success against red bugs. The percentage of kill has been approximately the same as that secured by nicotine sulphate in the spray solution. We found, however, that the action of the dust is much quicker. We have also used derris in both the liquid and powder forms against red bugs and other insects. The solution worked as effectively as nicotine sulphate but we did not succeed in getting control with the powder form when used in solution."



FALSE APPLE RED BUG (Lygidea mendax Reut.)^v

New York C. R. Crosby and assistants. "These insects are beginning to appear in Genesee, Chautauqua, Orleans, Onondaga, Ulster, Wayne, Rockland, and Monroe Counties. In some places they are producing considerable alarm."

Pennsylvania S. W. Frost (June 14). "The false apple red bug has been numerous throughout the early part of the summer. The insects have transformed to adults, the first of the adults being found June 8."

Ohio H. A. Gossard (May 26). "The false apple red bug is extending its range from local centers in northeastern Ohio and is beginning to take rank in some orchards as an apple pest of the first order."

ROSE LEAFHOPPER (Typhlocyba rosae L.)^v

New York C. R. Crosby and assistants report this insect as beginning to appear in serious numbers in Tompkins, Wayne, Columbia, and Chautauqua Counties.

Pennsylvania S. W. Frost (June 14). "These leafhoppers are becoming abundant on apple and their injury during the past week is becoming very noticeable."

Missouri A. C. Burrill (May 18). "These insects are doing quite serious damage by spreading fire blight, and have all hatched within the past week."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

New York C. R. Crosby and assistants. "This insect is showing slight increase in Greene County and is also noticeable in parts of Columbia, Monroe, and Chautauqua Counties."

Indiana J. J. Davis (June 16). "The seriousness of the San Jose scale situation remains unchanged."

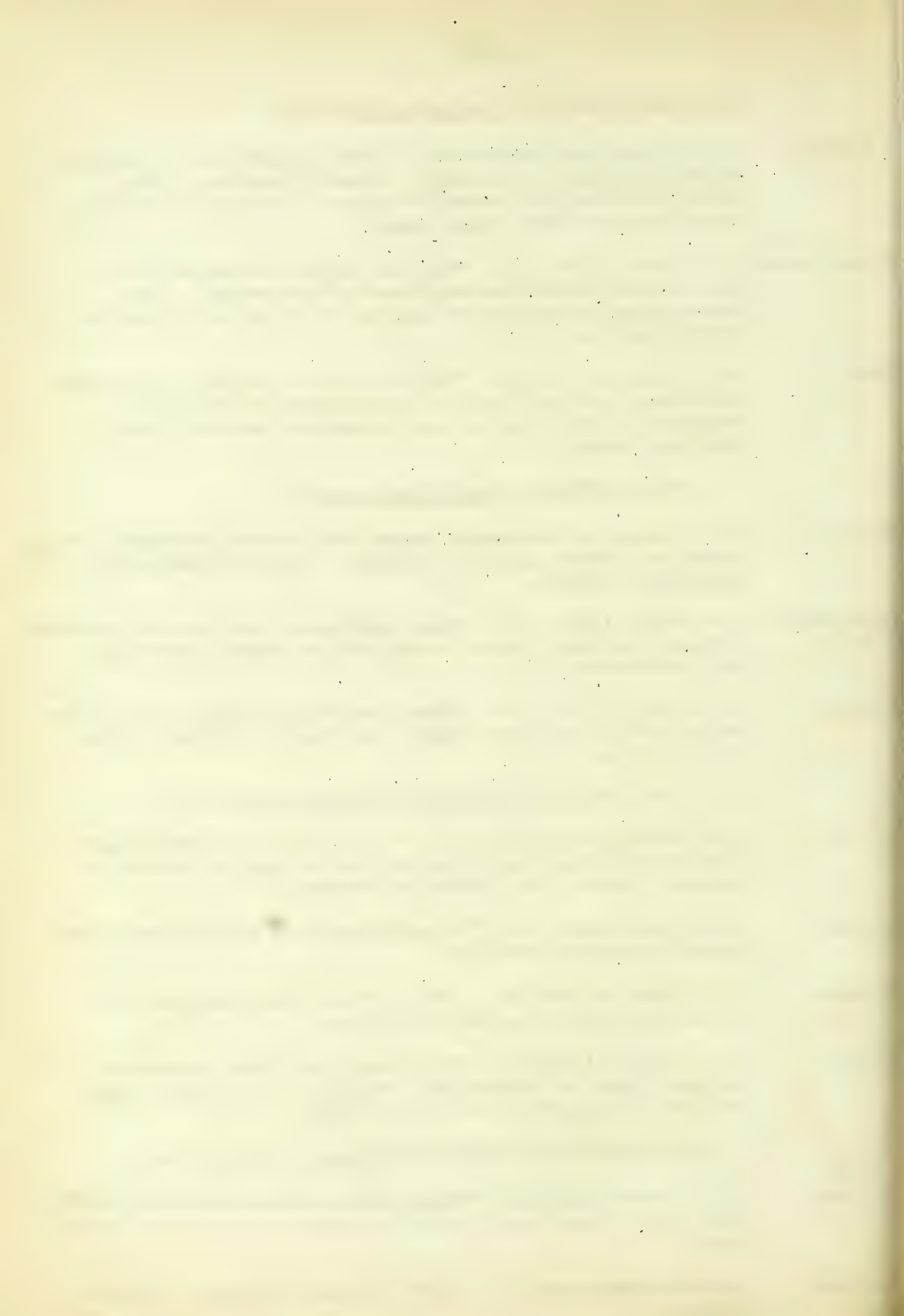
Illinois S. C. Chandler (May 26). "The first crawling young of the season was observed on May 26 at Olney."

Missouri A. C. Burrill (June 8). "This insect is present in rather serious numbers at Jackson and Pressley. It has also been observed at Bloomfield and Poplar Bluff."

ROUND HEADED APPLE-TREE BORER (Saperda candida Fab.)

West Virginia F. E. Brooks (May 19). "Considerable complaint in this locality of injury to young apple trees this spring by the round headed borer."

Missouri A. C. Burrill (June 15). "Quite serious in parts of Caldwell County."



FLAT HEADED APPLE-TREE BORER (Chrysobothris femorata Oliv.) ✓

Wisconsin S. B. Fracker (May 19). "Ten per cent of the trees in a new orchard at Marinette are girdled, while from 10 to 20 per cent additional trees are infested."

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.) ✓

Massachusetts H. T. Fernald (June 22). "Adults of the pear psylla were very abundant at Amherst on May 29."

New York C. R. Crosby and assistants. "Psylla eggs had practically all hatched in the lake apple-growing region by May 20, and from the 25th to 27th adults of the first brood were appearing in Monroe, Columbia, and Wayne Counties."

PEAR-LEAF BLISTER MITE (Eriophyes pyri Pgst.) ✓

New York C. R. Crosby and assistants. "The pear-leaf blister mite was observed late in May and early in June in Monroe and Chautauqua Counties."

Missouri A. C. Burrill (May 23). "This insect is appearing quite seriously in parts of Cass County. There may be a small epidemic starting in western Missouri."

Washington E. J. Newcomer (June 14). "This pest was first discovered in the Yakima Valley last year as a pest of apple and has recently been found in several localities in the Valley."

Oregon Leroy Childs (June 9). "A noticeable increase in abundance and spread of the blister mite on apples. No noticeable increase on pears; in fact, in all orchards, even on unsprayed trees, they are less abundant than last year. Reports from the White Salmon fruit district of Washington indicate that the blister mite on apple is widespread and causing serious damage to foliage and fruit."

CALIFORNIA PEAR SAWFLY (Gymnonychnus californicus Marlatt)

Oregon A. L. Lovett (May 24). "This insect is decidedly more numerous than usual at Medford, Grants Pass, Corvallis, and Hood River. The larvae were nearly mature at Medford on May 24, while on this date they were but about one-fifth grown at Corvallis. In orchards where the arsenate sprays were applied the larvae were scarce and the injury negligible."

PEAR SLUG (Caliroa cerasi L.)

Iowa F. D. Butcher (June 15). "The pear slug is present in a few places near Ottumwa. In Wapello County it is doing a good deal of damage."

The first part of the paper is devoted to a general discussion of the problem of the origin of life. It is shown that the problem is one of the most important and interesting in the history of science. The author discusses the various theories of the origin of life, and shows that the most probable one is the theory of spontaneous generation.

The second part of the paper is devoted to a detailed discussion of the theory of spontaneous generation. It is shown that this theory is based on the fact that life is a complex of many different parts, and that these parts are all derived from a common ancestor. The author shows that this theory is the only one that can explain the origin of life.

The third part of the paper is devoted to a discussion of the evidence in favor of the theory of spontaneous generation. It is shown that there is a great deal of evidence in favor of this theory, and that it is the only one that can explain the origin of life. The author shows that the evidence is of two kinds: direct evidence and indirect evidence.

The fourth part of the paper is devoted to a discussion of the objections to the theory of spontaneous generation. It is shown that there are many objections to this theory, but that they are all based on a misunderstanding of the facts. The author shows that the objections are unfounded, and that the theory of spontaneous generation is the only one that can explain the origin of life.

The fifth part of the paper is devoted to a discussion of the conclusions of the author. It is shown that the theory of spontaneous generation is the only one that can explain the origin of life. The author shows that the evidence is of two kinds: direct evidence and indirect evidence. The author concludes that the theory of spontaneous generation is the only one that can explain the origin of life.

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Oregon A. L. Lovett (May 23). "Adult sawflies were observed ovipositing on this date. They seem to be in normal numbers."

PEAR MIDGE (Contarinia pyrivora Riley)

New York E. P. Felt (May 24). "The pear midge appears to be somewhat generally distributed in the southern portion of Columbia County, infesting Clapps, though Seckels appear to be nearly immune."

C. R. Crosby and assistants report late in May and early in June that the pear midge has caused very serious losses in Milton, Ulster, and Columbia Counties, while less serious damage is being done in Genesee and Greene Counties.

PEAR BORER (Aegeria pyri Harris)

West Virginia F. E. Brooks. "Considerable injury has been noticed this spring by the larvae of this species working in the bark of young apple trees."

PEACH

PEACH BORER (Aegeria exitiosa Say)

New York R. G. Palmer. "Abundant throughout Chautauqua County, and causing considerable damage in some orchards."

Pennsylvania S. W. Frost (June 14). "During the past year we have conducted some demonstrations with paradichlorobenzene. Treatments were made last fall and the borers dug early this month. Where the borers were dug last fall an average of 3.2 borers per tree were found, while in plots where paradichlorobenzene was used showed an average of only 0.4 borers per tree."

BLACK PEACH APHID (Anuraphis persicae-niger Smith)

Maryland E. N. Cory (May 27). "This insect is seriously infesting peach trees at Glenburnie, and many of the trees are dying. We have recommended the use of one-half ounce of paradichlorobenzene per tree."

SAY'S BLISTER BEETLE (Pomphopoea sayi Lec.)

New York C. R. Crosby and assistants. "This beetle was reported about the middle of June as doing very serious damage to cherry and peach in Livingston and Monroe Counties. It was also reported as doing less serious damage from Yates, Seneca, Schenectady, Washington, Broome, Tompkins, and Schuyler Counties."

CHERRY

CHERRY APHID (Myzus cerasi Fab.)

- New York C. R. Crosby and assistants report this insect rather numerous in Ulster, Columbia, and Monroe Counties.⁴
- Delaware C. O. Houghton. "Trees which were covered with this aphid last year are entirely free from it this season."
- Indiana J. J. Davis (June 16). "This is one of the more common aphids recently reported."
- Ohio H. A. Gossard (May 26). "The black cherry aphid has been received two or three times."
- Nebraska M. H. Swenk (June 15). "In Nance and Merrick Counties the cherry trees were heavily attacked by the cherry aphid."
- Missouri A. C. Burrill (May 20). "The first bad case of the season was observed at Bloomfield to day."

' UGLY NEST CATERPILLAR (Archips cerasivorana Fitch)

- New York E. P. Felt (June 23). "An unusual infestation of this insect on choke-cherry was noted early in the month in the western portion of Orleans County, a small group of shrubs being so badly infested that all of the leaves were devoured and the bushes literally shrouded in webbing."

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- Massachusetts H. A. Mostrom (June 10). "This insect is particularly in evidence wheré early spraying was not attended to. Have noted some trees in Essex County with more than half of the fruit infested."
- Connecticut W. E. Britton (July 23). "This pest is apparently more abundant than usual in the New Haven and Middletown districts. Experiments carried on at Wallingford by Mr. E. M. Stoddard seem to indicate that spraying with atomic sulphur is somewhat effective."
- New York C. R. Crosby and assistants. "The plum curculio is causing serious damage in practically the entire fruit growing region of New York State, being equally destructive on plums, cherries, and apples."
- New Jersey M. D. Leonard (June 19). "Egg punctures are very abundant on apples at Pompton. Also doing damage to peaches at this place."

THE HISTORY OF THE

The history of the world is a long and tedious story, and it is not possible to tell it in a few words. It is a story of many ages, of many nations, and of many events. It is a story of the rise and fall of empires, of the growth of civilization, and of the progress of knowledge. It is a story of the struggles of the human race for freedom, for justice, and for peace. It is a story of the triumphs of the human spirit over the forces of nature and of evil. It is a story of the love and friendship of men and women, of the courage and heroism of the great leaders of the world, and of the wisdom and goodness of the great teachers of the world. It is a story of the beauty and glory of the human race, and of the hope and faith that give us the strength to face the future.

Missouri

A. C. Burrill (June 8). "A very serious infestation of plums and apricots is under way at Jackson, in many cases the entire crop being injured. Farmers say this is the worst attack they have ever had."

RASPBERRY

RASPBERRY SAWFLY (Monophadnoides rubi Harris)

New York

R. G. Palmer (June 7). "A 3-acre planting at Sheridan was very seriously infested, the bushes being practically defoliated."

Michigan

R. H. Pettit (June 17). "The raspberry sawfly is doing quite a bit of damage here in Michigan. It is very much worse this year than usual throughout the State."

Oregon

A. L. Lovett (June 14). "This insect is slightly more abundant than last year. The first larva was observed at Corvallis on May 25."

RASPBERRY FRUITWORM (Byturus unicolor Say)

New York

C. R. Crosby. "Mr. R. G. Palmer reports that these insects are doing damage in several sections of Chautauqua County, and Mr. Hammond reports that they have put in their appearance late in May in the Newburg section of Orange County."

RASPBERRY MAGGOT (Phorbia rubivora Coq.)

Oregon

A. L. Lovett. "This insect was very abundant during the latter half of May and the first half of June. Loganberry crowns showed lack of vigor this spring and in many cases failed to put out a normal number of canes, hence the injury to a few by this insect was more significant than might generally be true."

CURRANT

CURRANT APHID (Myzus ribis L.)

New York

C. R. Crosby and assistants report this insect during the first half of June and the latter part of May as very abundant in Monroe, Ulster, Oswego, Otsego, and Orleans Counties."

E. P. Felt. "Locally abundant and injurious in parts of Rensselaer County."

IMPORTED CURRANT WORM (Pteronidea ribesii Scop.)

New York

C. R. Crosby and assistants report this insect as very destructive in several sections of Orange, Chautauqua, and Rockland Counties."



- Nebraska M. H. Swenk (June 15). "The imported currant worm continued its injuries on gooseberries and currants until June 1 when the injury stopped."
- Missouri A. C. Burrill (May 11). "This insect is reported as having destroyed the gooseberry crop two years in succession in Chariton County. It is now being controlled by arsenical sprays."

PECAN

PECAN PHYLLOXERA (Phylloxera spp.)

- Mississippi R. W. Harned (June 17). "Considerable attention has been attracted to phylloxera galls on pecan this spring. Apparently these insects have caused an extraordinarily large number of galls this season. Mr. T. L. Guyton of Harrisburg, Pa., has identified four species of Phylloxera among the specimens sent to him for determination. These are as follows: P. foveola, P. devastatrix, P. perniciosa, and P. caryaocaulis."
- Louisiana T. H. Jones. "Phylloxera galls on pecans were sent in from Colfax and East Point during the latter half of May."
- Texas M. C. Tanquary (June 17). "This insect has been reported as being very abundant this year."

FALL WEBWORM (Hyphantria cunea Drury)

- Mississippi R. W. Harned (June 17). "Adults of the fall webworm were observed ovipositing on pecan leaves in considerable numbers at the Agricultural College as early as May 25. The indications are that these insects will be very numerous this year, probably more abundant than for several years. We believe that they are more numerous at the present time than we have ever noticed them this early in the season."

WHITE GRUBS (Phyllophaga sp.)

- Mississippi R. W. Harned (June 17). "We have received more complaints than usual in regard to May beetles injuring pecan trees."

GRAPE

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

- Massachusetts H. T. Fernald (June 22). "The rose-chaffer first appeared here on June 4."
- Connecticut W. E. Britton (June 23). "This insect has been reported as causing injury to garden vegetables and black and red raspberries in northern Litchfield County. It is less abundant than usual in Malborough, New Haven."

G. H. Hollister (June 22). "This insect is very serious in parts of East Hartford. It is attacking grapes, privet,



peaches, hydrangea, peony, rose, weigelia and in fact nearly all shrubs."

New York

C. R. Crosby and assistants report this insect as doing serious damage at Milton in Ulster County.

West

Virginia

F. E. Brooks (May 20). "The first beetles appeared on this date. Only a few were observed on the blossoms of peonies."

Indiana

J. J. Davis (June 16). "The rose chafer has been abundant again this spring. Some of the recent reports included damage to peaches at Vincennes, to grapes at Fort Wayne and Vevay, and to apples at Aurora."

GRAPE LEAFHOPPER (Erythroneura comes Say)

New York

J. B. Palmer (June 7). "A very serious infestation has developed throughout the Chautauqua grape belt. The lower leaves have become so sickly and dry that the canes for next year are bound to suffer. These insects began to appear in numbers the latter part of May."

Pennsylvania

M. D. Leonard (June 15). "Adults are very abundant and considerable foliage injury is apparent at North East."

Michigan

R. H. Pettit (June 8). "Grape leafhoppers are now laying eggs and once in a while one finds a few nymphs just hatched."

GRAPE-BLOSSOM MIDGE (Contarinia johnsoni Sling.)

Michigan

R. H. Pettit (June 9). "It may be of interest to note that the grape-blossom midge was discovered for the first time in the Lawton grape belt today."

FIG

CITRUS MEALYBUG (Pseudococcus citri Risso)

Louisiana

T. H. Jones (June 9). "Some complaints of this mealybug on figs are reported from Baton Rouge."

COCONUT

COCONUT SCALE (Aspidiotus destructor Sign.)

Guam

C. W. Edwards, Guam Agricultural Experiment Station (May 21, 1921). "The most outstanding plant trouble that has come to our notice the past few years is the coconut scale which practically ruined the entire coconut industry of the neighboring island of Saipan. It was necessary for one to observe this outbreak at its height in order to appreciate fully the possible destructive character of this pest. Recently a letter was received from the Superintendent of Agriculture of Suva, Fiji, mentioning the presence in Fiji of Aspidiotus transparens (=destructive).

and stating that a chalcid parasite had been introduced to control this scale. The authorities in Saipan claim that the scale is now being parasitized. Recently I obtained material and forwarded it to the Department for identification. The question of a control parasite for this scale is one of very great importance to the coconut industry throughout the Orient."

TRUCK - CROP INSECTS

GENERAL FEEDERS

CUTWORMS (Noctuidae)

- Massachusetts H. A. Mostrom (June 10). "Cutworms are proving particularly troublesome this year in small gardens, much more so than usual in Essex County."
- J. B. Boston (June 10). "Cutworms are much worse on garden crops in Barnstable County than usual. One man reports a net loss of \$500 due to these insects on a 6-acre plat."
- Connecticut M. P. Zappe (June 27). "These insects are very serious on early cabbage at Danbury."
- New York C. R. Crosby and assistants. "Cutworms are very serious in Chautauqua, Monroe, Erie, and Clinton Counties."
- Michigan R. H. Pettit (June 8). "Cutworms are perhaps worse than usual this year and we received reports that paper collars do not seem to work in all cases. I imagine the climbing cutworms are mixed in with the ordinary garden varieties."
- Colorado O. E. Bremner (May 1). "Cutworms are very bad on tomatoes and young prune trees, eating out buds and leaves. They are also bad on grapes in Sonoma County."

WIREWORMS (Elateridae)

- Oregon W. E. Pound (June 8). "The larvae of a species of Limonius have eaten radishes, onions, turnips, beets, beans, corn, cucumbers, and melons in the Umatilla district, the last four crops scarcely coming through the ground before they are destroyed."
- New York C. R. Crosby (May 13). "Agriotes mancus Say is reported as injuring crops on muck lands at Elba. Associated with this outbreak is Melanotus sp."



BANDED FLEA-BEETLE (Systena taeniata Say)

Indiana J. J. Davis (June 16). "Flea-beetles have been generally abundant and destructive to corn, tomatoes, and soybeans the past few weeks."

POTATOES AND TOMATOES

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Massachusetts H. T. Fernald (June 22). "The Colorado potato beetle and the three-lined potato beetle, particularly the former, appear to be more abundant than usual. Mr. Mostrom reports that the egg-laying period was opening up rapidly on June 10 in Essex County."

Connecticut W. E. Britton (June 23). "The potato beetle seems to be generally rather scarce in New Haven, Tolland, and Middlesex Counties."

New York C. R. Crosby and assistants report that egg laying was well under way the first week in June in Chautauqua, Columbia, and Orange Counties."

New Jersey M. D. Leonard (June 19). "Beetles are rather scarce at Pompton. Not much damage as yet."

Nebraska M. H. Swenk (June 15). "The Colorado potato beetle appeared about the middle of May and is proving but normally abundant. In western Nebraska, where this pest was in many years not numerous enough to require spraying for its control, this year the potato growers are preparing a spray on a considerable scale."

Missouri A. C. Burrill (May 20). "A light infestation occurs at Bloomfield. First larvae of the new brood appeared on this date." (June 17) "Spraying with lead arsenate is proving very effective in Schuyler County."

Kansas E. G. Kelly (May 25). "This insect seems more abundant this year than usual. The first brood is now hatching."

Oregon H. K. Dean (June 8). "This insect is much worse than usual in the Umatilla project. The larvae first appeared about June 6."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

Massachusetts H. T. Fernald (June 22). "Flea-beetles of various species, but mainly the potato flea-beetle, were unusually abundant on June 19."

The first part of the paper discusses the importance of maintaining accurate records of all transactions. It is essential for the business to have a clear and concise record of all income and expenses. This will allow the business to track its financial performance over time and identify areas for improvement. The second part of the paper discusses the importance of maintaining accurate records of all assets and liabilities. This will allow the business to track its net worth over time and identify areas for improvement. The third part of the paper discusses the importance of maintaining accurate records of all debts and obligations. This will allow the business to track its financial obligations over time and identify areas for improvement. The fourth part of the paper discusses the importance of maintaining accurate records of all taxes and other legal obligations. This will allow the business to track its financial obligations over time and identify areas for improvement. The fifth part of the paper discusses the importance of maintaining accurate records of all other financial information. This will allow the business to track its financial performance over time and identify areas for improvement.

- New York C. R. Crosby and assistants. "These beetles are reported as doing serious damage in Chautauqua, Nassau, Columbia, and Orange Counties, where they are attacking potatoes, tomatoes, and cabbage seedlings."
- New Jersey M. D. Leonard (June 19). "Feeding holes numerous the latter part of May and early June but thorough spraying has given good protection."
- Pennsylvania S. W. Frost (June 14). "This insect has been found very abundant throughout Adams County this summer."
- Indiana J. J. Davis (June 16). "These insects have been found attacking corn, tomatoes, and soybeans."
- Missouri A. C. Burrill (May 19). "This insect is swarming on deadly nightshade and, undoubtedly, will do serious damage to garden crops in the Bloomfield section."

AUSTRALIAN TOMATO WEEVIL (Desiantha nociva Lea)

- Mississippi F. H. Chittenden (Monthly letter, Bur. of Ent. No. 97). "To date the new potato weevil is found in the Counties of Stone and Harrison in southern Mississippi by inspectors of the Mississippi State Plant Board. The infested area covers a strip of territory about 14 miles long and 5 miles wide."

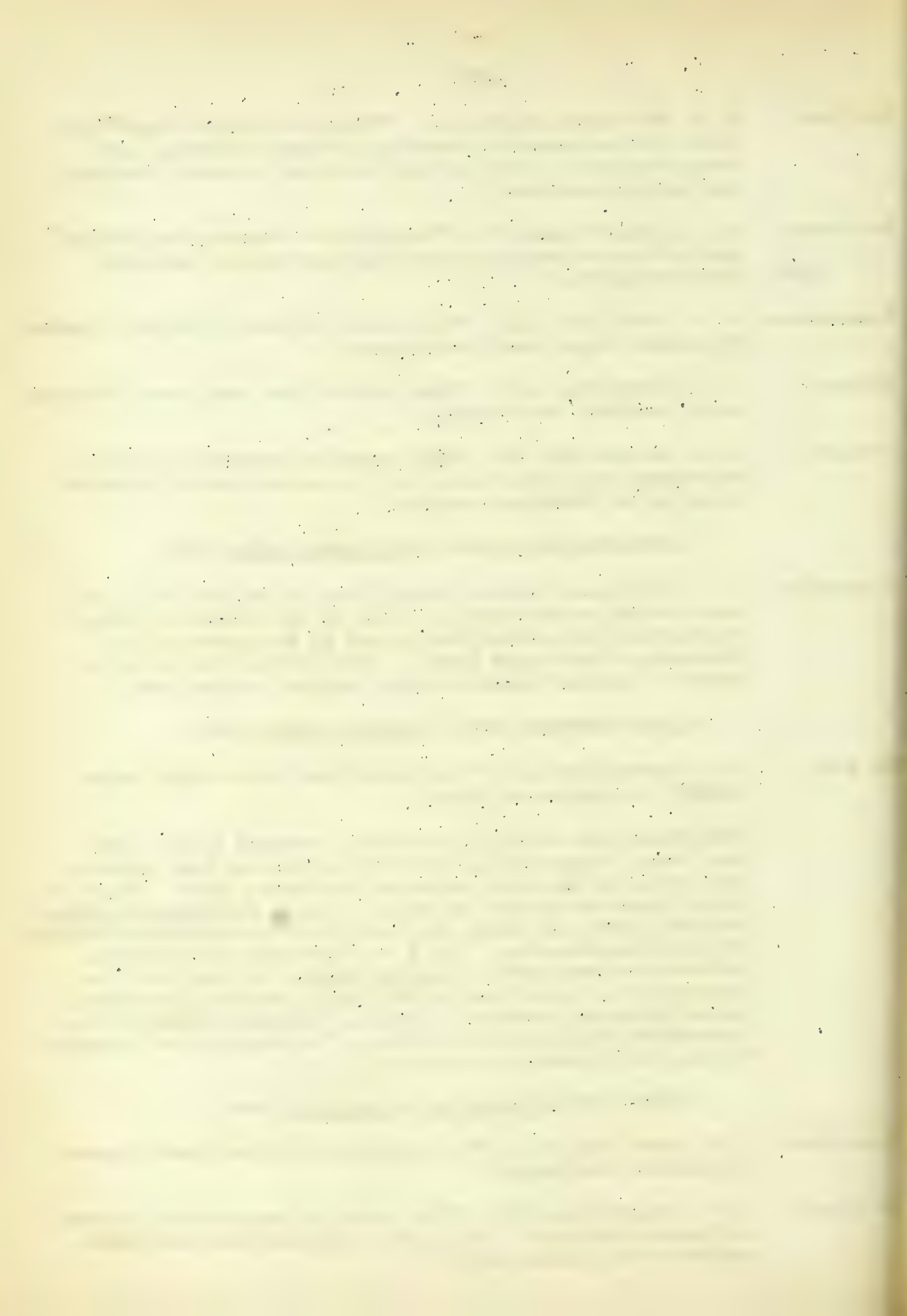
CLAVATE TORTOISE BEETLE (Deloyala clavata Fab.)

- New York C. R. Crosby (May 31). "This insect was found eating tomato foliage in a garden at Ithaca."

(Editorial note: Mr. H. S. Barber has recorded in Proc. Ent. Soc. Wash., Volume XVIII, that this species has been reported as an enemy of the white potato as far back as 1870. Dr. W. D. Pierce found the species in Texas, breeding on Physalis cornuta. Both the larvae and adults are known to attack potato and bitter-sweet in Massachusetts. Dr. F. H. Chittenden has specimens collected on horse nettle (Solanum nigrum) at Glen Echo, Md. This species is also found in New Mexico, Arizona, Louisiana, Kansas, Missouri, Nebraska, Michigan, Kentucky, Massachusetts, Connecticut, Maryland, and Florida. The records from Nebraska, Kansas, and Missouri are uncertain.)

POTATO APHID (Macrosiphum solanifolii Ashm.)

- Pennsylvania S. W. Frost (June 14). "This aphid has not been found abundant on potatoes this summer."
- New Jersey M. D. Leonard (June 19). "This insect is comparatively scarce at Pompton this year. Only a few specimens have been found and these were parasitized."



Virginia W. H. White (June 6). "The potato aphid has caused serious damage to potatoes on the eastern shore of Virginia. The aphid was particularly abundant in the vicinity of Onley and Eastville. The fungous disease ~~was~~ apparently checking the spread of this pest to a certain extent. The recent heavy rains have also been a factor in control. The principle damage was to the terminal shoots which were in many instances completely killed." (June 8) "The potato aphid has caused serious damage in the Norfolk section. At the present time a fungous disease is preventing its further spread."

South Carolina A. N. Conradi (June 1). "County agent of Charleston County reports that this insect is exceptionally abundant this year where he estimates that the yield has been cut 30 per cent by this insect."

POTATO LEAFHOPPER (Empoasca mali LeB.)

New Jersey M. D. Leonard (June 19). "Adults of this leafhopper are now fairly abundant about Pompton. They were first observed the early part of this month. No nymphs as yet or any sign of hopperburn."

Iowa F. A. Fenton (June 20). "The potato leafhopper appeared in Lee County June 5 and in central Iowa June 12. The first spray was put on in southern Iowa Counties the week of June 12 and is being put on in central Iowa the week of June 19."

TARNISHED PLANT-BUG (Lygus pratensis L.)

Nebraska M. H. Swenk (June 15). "Early in June a potato field in Richardson County became so heavily infested with the tarnished plant-bug that many of the plants wilted down and died, with occasionally a heavy loss in a field."

POTATO-TUBER WORM (Phthorimaea operculella Zell.)

Mississippi R. W. Harned (June 17). "Recently larvae and pupae were collected from the stems of potato plants at McHenry. These were determined by Dr. F. H. Chittenden as possibly the potato-tuber moth. This is the first record we have of this insect occurring in Mississippi and may eventually prove to be some other species."

MITES (Rhizoglyphus sp.)

Nebraska M. H. Swenk. "Shortly after the middle of May a field of early Ohio potatoes in Buffalo County became seriously attacked by mites to such an extent that about 20 per cent of the plants were badly hurt, the mites penetrating far up the stems of the plants from deep pits on the sides of the roots. Other fields of early Ohios in the vicinity were similarly but less seriously affected while none of this injury was observed on Cobblers."

CABBAGE

CABBAGE MAGGOT (Hylemyia brassicae Bouche).

- Massachusetts H. A. Mostrom (June 10). "This insect is quite serious in Essex County, some farmers losing rather a heavy percentage of the plants set out. Many of the larvae have already pupated."
- New York C. R. Crosby and assistants. "Late in May and early in June serious injury to cabbage was reported from Chautauqua, Monroe, and Nassau Counties."
- Colorado C. P. Gillette (June 21). "During my residence of more than thirty years in Colorado I have never seen or heard of a cabbage plant attacked by the cabbage maggot until recently when two complaints came to my office, one accompanied by a good-sized package of cabbage plants from a market near Denver that were ruined by this insect."

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

- New York C. R. Crosby and assistants. "Late in May these flea-beetles were reported as doing serious damage in Nassau County."

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

- New York E. P. Felt (May 24). "Somewhat generally prevalent in Albany, Columbia, and Saratoga Counties where it has been doing quite serious damage to old beds, ranging from 10 to 50 per cent damage."

Barypeithes pellucidus Boh.

- New York E. P. Felt (June 23). "Mr. L. V. Jones and Mr. R. E. Horsey have both brought to my attention this weevil. It occurred only in small numbers at Rochester and Geneva."

STRAWBERRY CROWN-BORER (Tyloderma fragariae Riley)

- Tennessee S. Marcovitch (June 10). "The strawberry crown-borer is a well known pest of old strawberry fields but in Tennessee it was found very numerous in the mother plants set out this spring and interfering with the production of runners. This condition is becoming common in Tennessee and it is becoming difficult to obtain a stand, due to the work of this borer. Full grown larvae can now be found."



SPITTLE INSECTS (Cercopidae)

- Oregon A. L. Lovett. "This season they are strikingly abundant on both strawberries and cane fruits. They occur mostly about the crown of strawberries and about the base of the canes on loganberries. No really serious injury is apparent as yet in spite of their extraordinary numbers."

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

- Massachusetts J. B. Boston (June 10). "This insect is worse than ever. Chickens do good work but spraying is unsatisfactory. The crop is seriously injured in Barnstable County."
- H. A. Mostrom (May 15). "Larvae are present and doing damage in unsprayed fields in Essex County."
- New York C. R. Crosby and assistants. "The common asparagus beetle is serious in Chautauqua, Orange, and Nassau Counties."
- Ohio H. A. Gossard (May 26). "Asparagus beetle larvae were appearing at Chillicothe during the third week of May."
- Colorado C. P. Gillette (June 21). "This insect was introduced in gardens at Boulder several years ago but only within the last year or two have complaints begun to come to this office of its appearance in gardens about Denver. The insect may be considered as established in the Denver-Boulder section now."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

- Tennessee J. A. Kennedy (June 22). "This insect is eating up garden beans, entirely destroying a field in a few days at Dayton."
- Miss M. Adsmend (June 19). "A new kind of weevil that has only been in this State a couple of years is destroying green beans. They multiply very fast and are about to destroy the bean crop at Spencer."
- H. W. Andrews (June 16). "The Mexican bean beetle is doing a great deal of damage at Sparta and in adjoining counties."
- Alabama W. E. Hinds (June 19). "The Mexican bean beetle is increasing very rapidly and the damage is likely to equal that of 1921 when it amounted to 75 or 80 per cent of the normal yield of table beans in the Birmingham area."

THE
HISTORY OF THE
CITY OF BOSTON

From its first settlement in 1630 to the present time, the city of Boston has been a center of commerce, industry, and culture. Its location on a small island in the harbor of Massachusetts gave it a strategic advantage from the beginning. The city's growth was rapid, and by the mid-18th century it was one of the largest and most important cities in the colonies. Its role in the American Revolution was pivotal, and it has since been a leader in many fields, including education, science, and the arts. The city's history is a testament to the resilience and innovation of its people.

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city of Boston has a rich and varied history. It was founded by a group of Puritan settlers in 1630, and it has since been a center of commerce, industry, and culture. The city's location on a small island in the harbor of Massachusetts gave it a strategic advantage from the beginning. The city's growth was rapid, and by the mid-18th century it was one of the largest and most important cities in the colonies. Its role in the American Revolution was pivotal, and it has since been a leader in many fields, including education, science, and the arts. The city's history is a testament to the resilience and innovation of its people.

20.10.1910 C. P. Gillette (June 21). "The Mexican bean beetle began to make its appearance in the Fort Collins district, according to our observations, on June 14 this year and was becoming fairly common by the 17th. It is a little later than usual this season."

PEAS

PEA APHID (Illinoia pisi Kalt.)

Massachusetts J. B. Boston (June 10). "Generally bad in Barnstable County where spraying with nicotine sulphate was resorted to."

Connecticut W. E. Britton (June 24). "Appeared in several fields about New Haven in the middle of June and did considerable damage."

New York H. C. Odell (May 18). "Severely infested fields found yesterday in Nassau County." (May 27). "The pea aphid is doing very severe injury in many fields in Nassau County."

New Jersey M. D. Leonard (June 19). "Present in small numbers about Pompton."

Delaware G. A. Ely (June 1). "This insect cut the factory pea crop one-half in some cases about Greenwood. In others the crop was a total failure."

Maryland E. N. Cory (May 16). "An outbreak of this insect on canning peas has developed at Betterton."

Indiana H. F. Dietz (June 19). "The pea aphid has been very abundant on peas this spring."

CLOVER ROOT-BORER (Hylastinus obscurus Marsh.)

Oregon A. L. Lovett (June 2). "Commercial plantings of garden peas in a small locality in Marion County were seriously attacked. This outbreak was undoubtedly due to adjacent fields of abandoned clover which were very heavily infested with this weevil."

CUCUMBER

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Massachusetts H. T. Fernald (June 22). "The cucumber beetle is now badly riddling the plants."

Connecticut M. P. Zappe (June 24). "This insect is much more numerous than usual about Burnside."



- New York C. R. Crosby and assistants report serious infestations of the striped cucumber beetle during the first week in June in Chautauqua, Nassau, and Onondaga Counties.
- Maryland J. A. Hyslop (June 15). "The striped cucumber beetle is much more abundant than usual in the southern part of Montgomery County, in many cases necessitating replanting."
- New Jersey M. D. Leonard (June 19). "These insects were observed attacking plants at Pompton about June 8."
- Nebraska M. H. Swenk (June 15). "The striped cucumber beetle has proven very plentiful during the past two weeks."
- Mississippi R. W. Harned (June 17). "The 12-spotted cucumber beetle and striped cucumber beetle have been causing considerable damage to melons in different parts of the State."
- Missouri A. C. Burrill (June 17). "The first report received from the northern part of the State came in today." (June 20) "Eggs have been laid within this week about Columbia."
- Kansas E. G. Kelly (June 6). "This insect is more numerous than usual this year. Egg laying has begun. Arsenate of lead is proving only a fair control."
- Colorado C. P. Gillette (June 21). "The striped cucumber beetle has been unusually destructive to canteloupes, cucumbers, and melons in the lower Arkansas Valley in Colorado the past spring. Some fields were so badly injured that it was necessary to plow under the plants."

MELONS

COTTON APHID (Aphis gossypii Glov.)

- Nebraska M. H. Swenk (June 15). "The melon aphid put in an appearance on cucurbits about June 10."
- Kansas E. G. Kelly (June 10). "Damage to melons great wherever no attempt was made to control these insects. Nicotine sulphate is only a fair control and is not at all successful without the addition of soap."

GARDEN SPRINGTAIL (Sminthurus hortensis Fitch)

- Massachusetts H. T. Fernald (June 22). "On June 6 these podurids were found in large numbers on cucumber and summer squash plants and more or less abundant on all types of seedlings and gardens."
- New York J. B. Palmer (May 22). "Four acres of melon seedlings were badly injured at Ithaca by the springtail."

SQUASH

SQUASH BUG (*Anasa tristis* DeG.)

- Iowa F. A. Fenton (June 20). "The squash bug is again appearing in destructive numbers and egg laying has begun."
- Nebraska M. H. Swenk (June 15). "The squash bug has proven very plentiful during the past two weeks."
- Missouri A. C. Burrill (June 20). "This insect is much more numerous than last month. Egg laying has been going on for two days and is now becoming general."

ONIONS

ONION MAGGOT (*Hylemyia antiqua* Meig.)

- Connecticut J. A. Manter (June 22). "This insect is doing much damage in gardens about Storrs."
- New York M. C. Hammond (May 27). "A light infestation is manifesting itself in Orange County."
- Indiana J. J. Davis (June 16). "The onion maggot is quite abundant in the State wherever onions are grown."
- Oregon A. L. Lovett (June 2). "As a whole this insect is much less abundant than usual. In demonstration plots where the British Columbia method of using cull onions as a lure for the adult flies was employed field infestation was slight. Cull and volunteer onions of the proper type showed from 50 to 500 eggs, and counts running as high as 437 maggots in a cull onion were made, many showing over 200 maggots. The idea of cull onions in onion maggot control is good. Our technique this year is faulty, as the majority of the culls were planted too shallow to be the best lure. The majority of the generation of onion maggots were nearly mature larvae on June 2; probably 4 per cent had pupated and adult flies and eggs were not uncommon."

ONION THRIPS (*Thrips tabaci* Lind.)

- New York G. E. Smith (May 17). "Onion thrips injury was observed on onions on the Genesee-Orleans muck tract."
- Wisconsin S. B. Fracker (May 20). "Unusual damage occurred about May 1 in the Green Bay district. The infestation was reduced by weather conditions and the injury was mostly outgrown by 'set' onions."



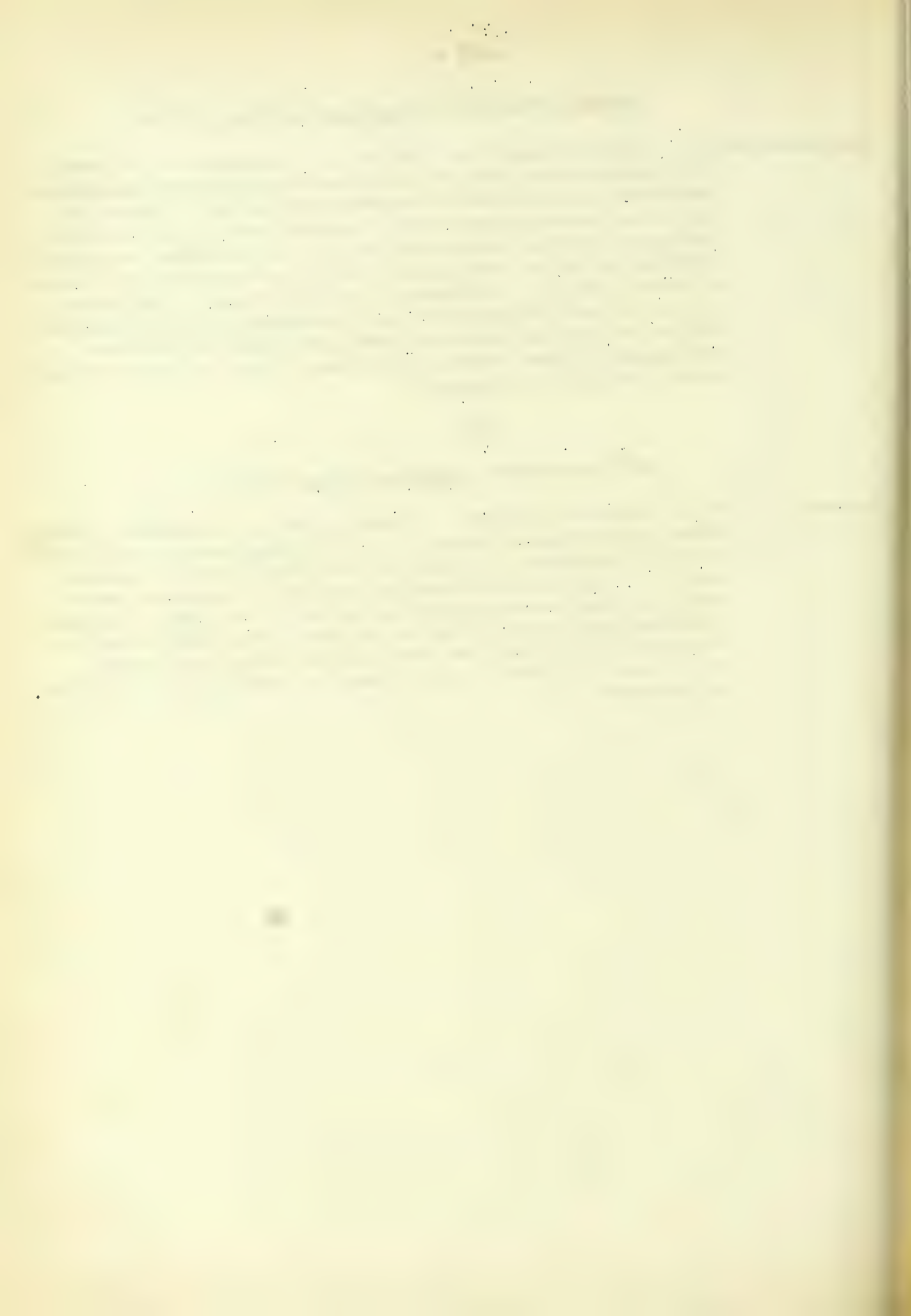
GARDEN SPRINGTAIL (Sminthurus hortensis Fitch)⁴

Massachusetts H. T. Fernald (June 22). "On May 27 complaints of the work of a podurid were received from Sunderland and on examination they were found present in extreme abundance. A survey of the Valley showed them present in every onion field from the northern limits at Sunderland to the Holyoke Range, a distance of about 10 miles, and across the Valley throughout the limits of onion growing, a distance of about 5 miles. The exact nature of their effect could not be satisfactorily determined but on the smaller plants in some cases half of them were destroyed. Older stands showed less injury and seemed to be able to outgrow the damage."

BEETS

BEET ROOT-~~WORM~~ (Pemphigus betae Doane)

Colorado C. P. Gillette (June 21). "Recently the agriculturist of the Great Western Sugar Company in Fort Collins took me to a field of beets that were just being thinned and that were looking badly. A thorough examination convinced us that the beets were suffering severely from the attack of the beet root louse which was present on the roots of most of the little beets. The agriculturist told me that a near-by field was plowed up because of injury by this louse that had lived over winter in the ground."



SOUTHERN FIELD CROPS INSECTS

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

South
Carolina

A. F. Conradi (June 1). "County agent in Lancaster County reports that there has been a very heavy increase of this pest which came out of hibernation during May. The insect is also reported as very abundant in Barnwell County, and 30 per cent more numerous in Fairfield County."

Alabama

W. E. Hinds (June 19). "Showed up in immense numbers from hibernation shelter, and prospects for damage are very serious at the present time. Infestation now as heavy as in any preceding year. Interest in dusting with calcium arsenate is increasing rapidly."

Mississippi

R. W. Harned (June 17). "At most places throughout Mississippi the boll weevil appeared earlier than usual this year and occurs in larger numbers than have previously been observed this early in the season. Everything indicates that more boll weevils hibernated successfully than during any previous winter since the insect reached Mississippi. This agrees with observations made by the Bureau of Entomology in Louisiana and other States."

Texas

M. C. Tanquary (June 17). "Our correspondence indicates that there is an unusual ^{heavy} and general infestation of the boll weevil this spring. Cotton planting was very much delayed by heavy spring rains. There will be a great deal of dusting with calcium arsenate this season."

COTTON RED SPIDER (Tetranychus telarius L.)

Alabama

W. E. Hinds (June 19). "The red spider is unusually abundant, destroying beans and other garden truck. The outlook is for an unusual outbreak on cotton a little later in the season."

STALK BORER (Papaipoma nitela Guen.)

Mississippi

R. W. Harned (June 17). "The stalk borer has been reported as injuring cotton from several places. This insect appears to be especially abundant this spring."

WINGLESS MAY BEETLE (Phyllophaga cribrata Lec.)

Texas

M. C. Tanquary (June 17). "The wingless May beetle has been reported from several different locations as doing considerable injury to cotton."



TOBACCO

. . . TOBACCO FLEA-BEETLE (Epitrix parvula Fab.)

Tennessee

A. C. Morgan (May). "The tobacco flea-beetle has been unusually prevalent upon seed beds and on newly set tobacco plants in Tennessee."

Florida

A. C. Morgan (May). "The tobacco flea-beetle has not been unusually numerous at Quincy station although control measures have been necessary."

. . . CORNROOT WORM (Cratichneumon Clem.)

Tennessee

A. C. Morgan (May). "The so called "wireworm" is attacking young tobacco plants in the field. Many fields are so badly attacked that an almost complete resetting will be necessary. It is only occasionally that this pest is severe in this district."

. . . BUDWORM (Chloridea virescens Fab.)

Florida

A. C. Morgan (May). "The budworm is a primary pest, and is as numerous as usual about Quincy."

. . . HORNWORMS (Protoparce spp.)

Florida

A. C. Morgan (May). "The hornworms are just beginning to appear in rather more than ordinary numbers in the Quincy district."

SUGAR CANE

. . . ANOMALA (Anomala orientalis Waterh.)

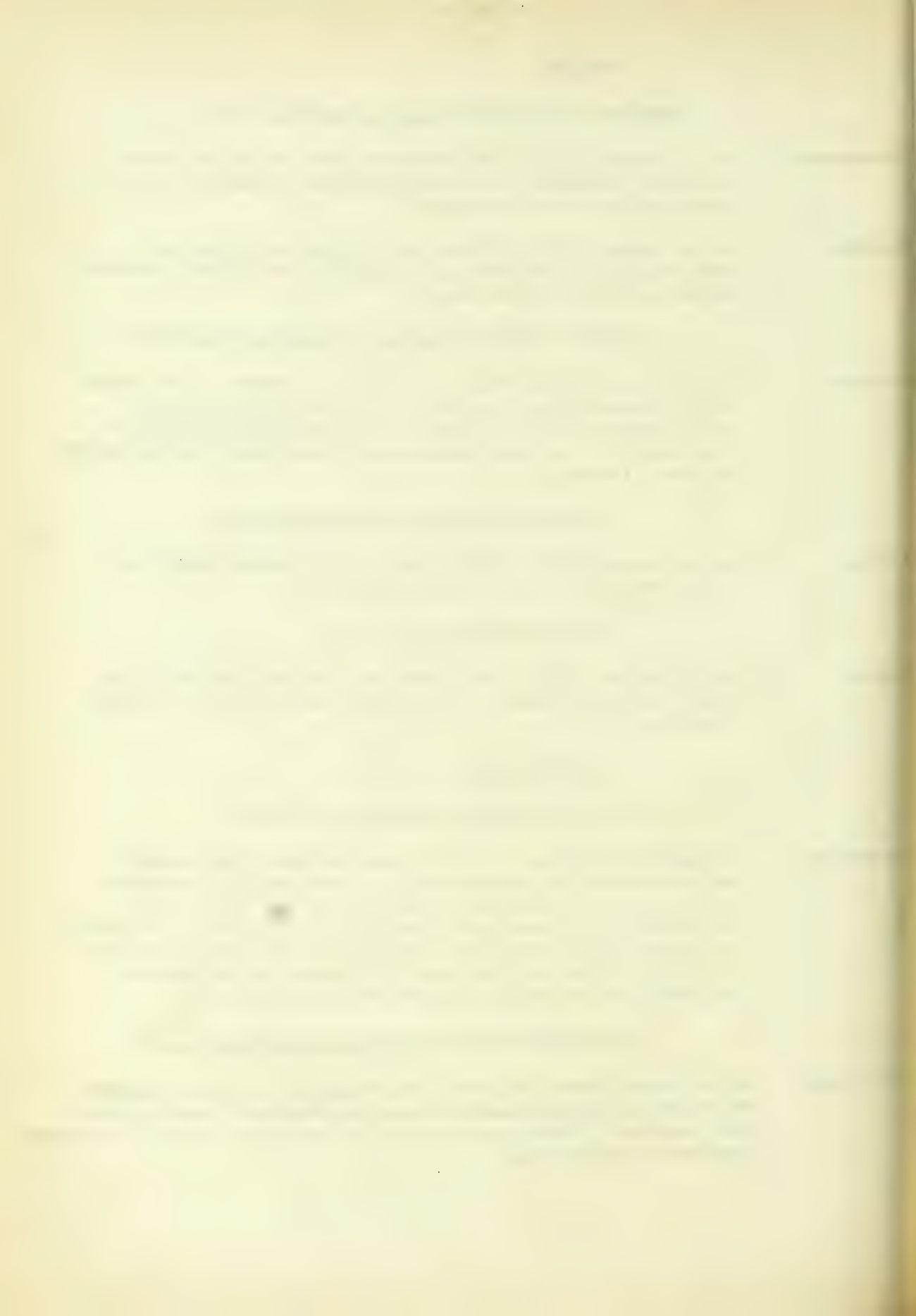
Connecticut

W. E. Britton (June 8). "The location where the anomala was discovered in Connecticut has been used as a nursery sales ground for several years. It is now being cut up for building purposes and I doubt if very much can be done in the way of exterminative measures. Possibly the changes now taking place on the land will accomplish as much as anything that we could do to wipe out the pest."

. . . SUGAR-CANE BEETLE (Eutheola rugiceps Lec.)

Mississippi

R. W. Harned (June 17). "We have received several complaints in regard to the rough-headed corn stalk-borer damaging sugar cane and corn. These complaints have come from several different sections of the State."



A. NEW SUGAR CANE BORER (Noctuidae)

Mississippi

T. E. Holloway (June 30). "A new lepidopterous borer has been found in sugar cane in southern Mississippi by Mr. E. K. Bynum of the Mississippi Plant Board and the writer. It is larger than the sugar cane moth borer, Diatraea saccharalis, and has structural differences. It is white in color, with the dorsum strikingly pink. Larval specimens have been submitted to Mr. Carl Heinrich, who reports "Noctuid unknown to me. Very interesting." The new borer seems capable of inflicting even more damage than Diatraea, judging from its size and the size of its tunnels, but while apparently distributed over a fairly wide area it is rather scarce in any one place. An inspector for scouting work has been employed on funds of the allotment for sugar cane insect investigations. He will work in cooperation with the Mississippi Plant Board."

FOREST AND SHADE-TREE INSECTS

GENERAL FEEDERS

PERIODICAL CICADA (Tibicina septendecim L.)

Brood XIII

West
Virginia

W. E. Rumsey (June 10). "On May 30 I heard a periodical cicada singing in my backyard at Morgantown. On June 4 a specimen was taken about 5 miles east of Morgantown and brought to the entomological laboratory with a report that two or three more were singing at the time the specimen was taken."

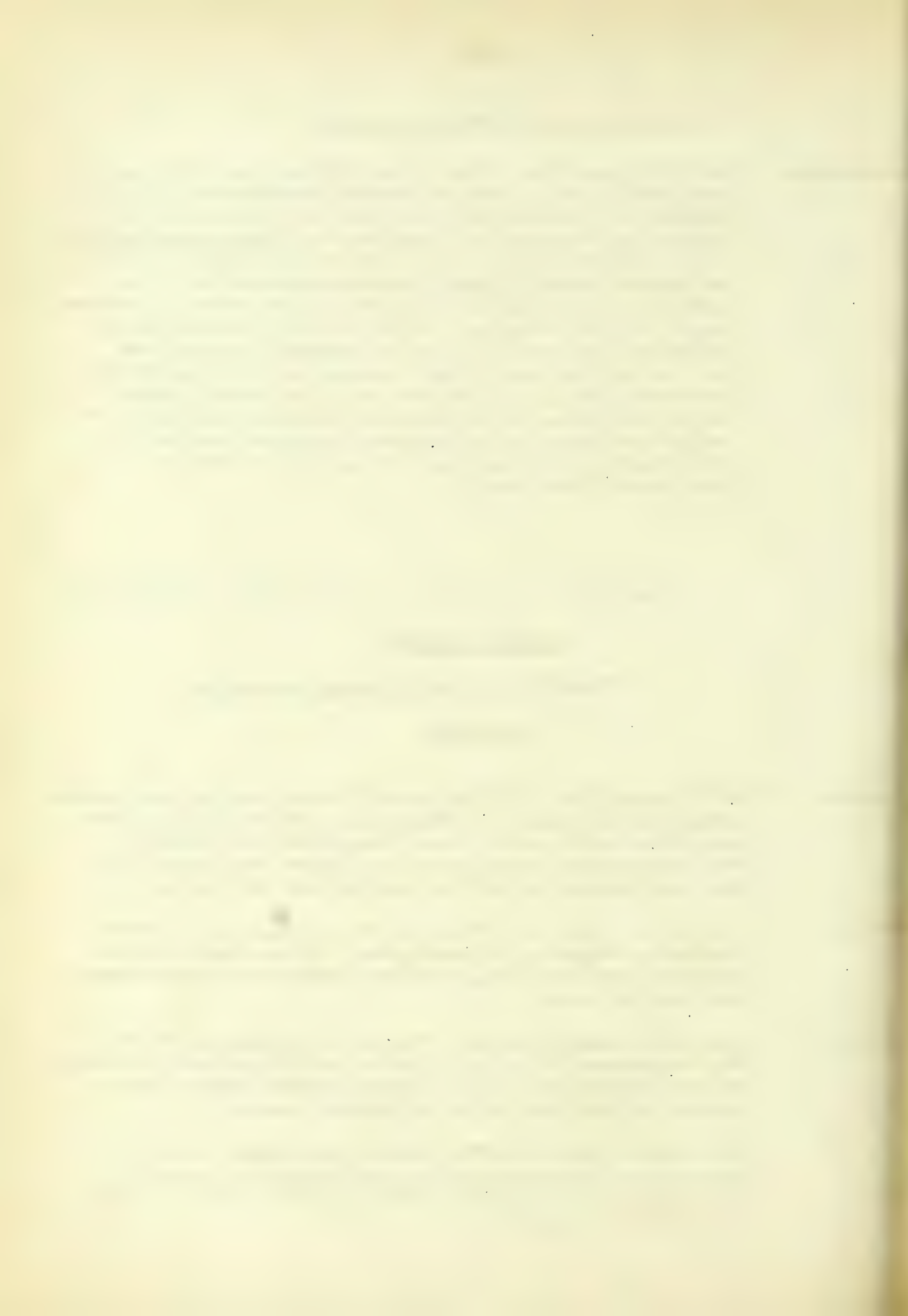
Indiana

J. J. Davis (June 16). "Observed the 17-year cicada fairly abundant at Munster, in Lake County. It was first noticed a week or two ago but has been most abundant and conspicuous the last few days."

Illinois

Harriet F. Holmes (May 18). "My farm is at Batavia on the Fox River about 35 miles due west from Chicago and the farmers in this neighborhood, while plowing, report finding large numbers of what they called the 17-year locust."

W. A. Rogers (June 3). "Millions of what appear to be 17-year locusts are coming out of round holes in the ground and climbing trees at Lisle. Thus far they do not seem to have done any damage."



W. P. Flint (June 6). "Adults have been taken at points in the north of Green County and in Macon and Champaign Counties. It is, apparently, abundant all over the State north of a line drawn through these points."

E. M. Ball (June 6). "They are in swarms in my yard in Chicago."

Mrs. J. A. McDonald (June 8). "The locusts seem to have arrived in great numbers at Streator, especially in the cemeteries, where there are mostly oak trees."

Mrs. D. M. Mertz (June 9). "This insect seems to be very much in evidence in DePage County."

J. E. Hamilton (June 9). "This pest is appearing in great numbers about Rockford."

E. A. Fenton (June 9). "This pest has already appeared in several localities in this State, namely: Scott, Benton, and Jackson Counties." (June 12) "In addition to above Counties this insect has appeared in Clayton and Muscatine Counties." (June 14) "The last report comes from Dubuque County."

Brood XXI

Mississippi R. W. Harned (June 14). "Although we have made a special effort to obtain cicadas, so far this season we have not received any of the 13-year brood from the eastern border of the State where they are supposed to occur this year. We have received two specimens that were collected near Pelahatchee, in Rankin County. This extends the known distribution of this brood to the westward as Pelahatchee is close to the center of the State."

JUNIPER

JUNIPER WEBWORM. (Dichomeris marginellus Fab.)

Connecticut T. H. Hollister (June 22). "This insect is quite serious in Hartford parks. Spraying with arsenate of lead at the rate of 5 pounds of lead arsenate to 50 gallons of water is being done now."

W. E. Britton (June 12). "This species was received from Greenwich."

ARBORVITAE

ARBORVITAE LEAF-MINER (Argyresthia thuella Pack.)

Connecticut W. E. Britton (June 24). "This insect is still present about New Haven though apparently less abundant than last year. It has also been furnished from New Canaan and from Wakefield, R. I."

The first part of the paper is devoted to a discussion of the general principles of the theory of the structure of the atom. It is shown that the structure of the atom is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The second part of the paper is devoted to a discussion of the general principles of the theory of the structure of the molecule. It is shown that the structure of the molecule is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The third part of the paper is devoted to a discussion of the general principles of the theory of the structure of the crystal. It is shown that the structure of the crystal is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The fourth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the liquid. It is shown that the structure of the liquid is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The fifth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the gas. It is shown that the structure of the gas is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The sixth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the plasma. It is shown that the structure of the plasma is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The seventh part of the paper is devoted to a discussion of the general principles of the theory of the structure of the solid. It is shown that the structure of the solid is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The eighth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the liquid crystal. It is shown that the structure of the liquid crystal is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

The ninth part of the paper is devoted to a discussion of the general principles of the theory of the structure of the gas crystal. It is shown that the structure of the gas crystal is determined by the laws of quantum mechanics, and that the laws of quantum mechanics are determined by the laws of the special theory of relativity.

. BAGWORM (Thyridopteryx sphineraformis Haw.)

Louisiana

T. H. Jones (June 1). "Sent in from De Ridder where they are said to be doing severe damage to trees in a park."

BIRCH

. . BRONZE BIRCH BORER (Agrilus anxius Gory)

Connecticut

W. E. Britton (June 24). "Several trees have died from last years' attack in New Haven and Derby. A large number of beetles were reared from the infested wood."

. . ALDER BORER (Saperda obliqua Say)

West Virginia

F. E. Brooks (May 19). "A number of small black birch are being injured by the larva of this species boring in the trunks at the surface of the ground."

ELM

. . ELM LEAF-BEETLE (Galerucella luteola Muell.)

New York

E. P. Felt (June 23). "Overwintering beetles and larvae were observed in Rochester on May 30, and about June 10 the infestation in the vicinity of New York City and the Hudson Valley appeared to be relatively light, eggs and half-grown grubs being noted the latter part of the month."

Oregon

A. L. Lovett (June 14). "This pest appears to be more abundant than usual in the Willamette Valley. First adults were observed on May 9, first eggs on May 25, and larvae on June 3. The infestation is heavy enough to defoliate the trees completely within the next three weeks."

. . WOOLLY ELM APHID (Eriosoma americana Riley)

New York

E. P. Felt (June 23). "This aphid has been the cause of several complaints from various sections of the State."

Indiana

H. F. Dietz (June 15). "The elm leaf-curl aphid has been very abundant at Indianapolis."

Nebraska

M. H. Swenk (June 15). "The unusual abundance of woolly elm aphids was first noticed early in June."

. . COCKSCOMB ELM-GALL (Colopha ulmicola Fitch)

New York

C. R. Crosby. "Infestation of elm trees by this aphid has been reported from Morton, Auburn, Mallory, and Tonawanda."



Indiana J. J. Davis (June 16). "This is among the more common aphids recently observed."

Massachusetts H. T. Fernald (June 22). "The elm scale has appeared more abundant than for several years."

ELM CASE-BEARER (Coleophora limosipennella Dup.)

New York E. P. Felt (June 23). "The elm case-bearer is locally abundant and injurious over a considerable area on Long Island and southern Westchester County. Groups of trees and bushy wayside growths are badly infested. The insect displays a marked preference for English and Scotch elms."

LARCH

LARCH CASE-BEARER (Coleophora laricella Huebn.)

Maine H. B. Pierson (June 23). "Large areas of larch are being severely injured by the larch case-bearer. This European leaf miner is so numerous that the larch stands already appear as if they had been swept by fire. The moths began flying about June 21 and there is every indication of a second brood appearing."

FIR

SPRUCE BUDWORM (Tortrix fumiferana Clemens)

Maine H. B. Pierson (June 23). "The spruce budworm which in the past ten years has destroyed over one-third of the mature spruce and fir in the State, has been found working in a large number of localities this year."

MAPLE

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Connecticut W. E. Britton (June 24). "This insect has infested silver maple street trees in one part of Stamford for several years and treatment has been necessary."

Indiana F. N. Wallace (June 19). "The cottony maple scale appears to be a serious pest in the cities and towns in the northern part of the State."

Minnesota A. G. Ruggles (June 13). "The cottony maple scale continued to be abundant in certain sections of the State where they are particularly working on boxelder."

Illinois W. P. Flint (June 17). "Extremely abundant on maple and boxelder in central and northern Illinois."

New Jersey E. P. Lott (June 15). "Abundant on silver maple at Summit."

Louisiana T. H. Jones (June 10). "Heavily infested material with egg



masses containing young sent in from Shreveport."

. . . MAPLE CHAITOPHORUS (Periphyllus lyropicta Kios.)

Indiana J. J. Davis (June 19). "This insect has been observed in various sections of the State, particularly central Indiana, on hard and Norway maple."

. . . SUGAR-MAPLE BORER (Glycobius speciosus Say)

New York E. P. Felt (June 23). "Is generally prevalent in Williamsville, Erie County. This locality has been under observation for more than twenty years. The more seriously affected trees of earlier years have succumbed and practically every sugar-maple of six inches diameter or more shows signs of considerable injury. A few trees were in such bad condition that two-thirds of the lower part of the larger limbs and upper part of the trunk had rotted away. The insect is generally distributed throughout the State."

BOXELDER

BOXELDER APHID (Periphyllus negundinis Thos.)

North . . .
Dakota R. L. Webster (June 20). "This pest seems to be abundant wherever the boxelder is grown."

Nebraska M. H. Swenk (June 15). "In the more western counties during the first half of June the boxelder aphid was unusually plentiful."

OAK

. . . TWO-LINED CHESTNUT BORER (Agrilus bilineatus Weber)

Pennsylvania J. K. Primm (June 12). "The two-lined chestnut borer has been the cause of more inquiries than any other pest occurring on oak. Many fine trees in the vicinity of Philadelphia are infested, especially English oak. In nurseries Pin. Oak, Scarlet oak, and Black oak are attacked. In a block of 475 Red oaks 236 were found infested. Nursery trees of 2 to 3 inches diameter are soon killed by this pest. Adults are now emerging."

PINE

. . . PALES WEEVIL (Hylobius pales Herbst)

Maine H. B. Pierson (June 23). "The pine weevil is very abundant in the southern part of the State."

The first part of the paper is devoted to a general
 discussion of the problem. It is shown that the
 problem is of great importance in the theory of
 functions of a complex variable. The second part
 contains a detailed proof of the theorem. The third
 part is devoted to some applications of the theorem.
 The fourth part contains some remarks and
 references.

WHITE-PINE WEEVIL (*Pissodes strobi* Peck)

Maine

H. B. Pierson (June 23). "The white pine weevil is very abundant in the southern part of the State."

EUROPEAN PINE-SHOOT MOTH (*Evetria buoliana* Schiff.)

Pennsylvania

J. K. Primm (June 5). "Three cases of Scotch pine at Morrisville, in Bucks County, are the only known infestation in this State. These trees are eleven years old. In the summer of 1920 our counts gave an average of 15 to 20 infested buds per tree. Early in the spring of 1921 several bushels of infested buds were gathered and burned. In late June a heavy application of 9-1 sulphur dust was given. These treatments materially reduced the amount of infestation. In April of the present year the trees were again given a thorough inspection and as many infested buds as could be found were destroyed. On the 5th of June 100 trees were inspected and only 20 infested buds were found. On this date the first adult was taken from a rearing cage."

PINE LEAF-MINER (*Paralechia pinifoliella* Chamb.)

Massachusetts

H. T. Fernald (June 22). "The pine leaf-miner is unusually abundant in the Cape Cod section of the State."

EUROPEAN PINE SAWFLY (*Diprion simile* Hartig)

Pennsylvania

J. K. Primm (June 12). "This insect is known to occur in a limited area in the southeastern section of the State. It has a pupal parasite which is very effective in its control and although it has been under observation for four years in this State it does not appear to have increased in numbers."

EUROPEAN WEB-SPINNING RED SPIDER (*Paratetranychus uniunguis* Jacob)

Connecticut

P. Garman (June 24). "What is apparently this species is increasing in nurseries from year to year in New Haven County where it is attacking spruce and red pine seedlings and doing considerable damage."

POPLAR

FOREST TENT CATERPILLAR (*Malacosoma disstria* Huebn.)

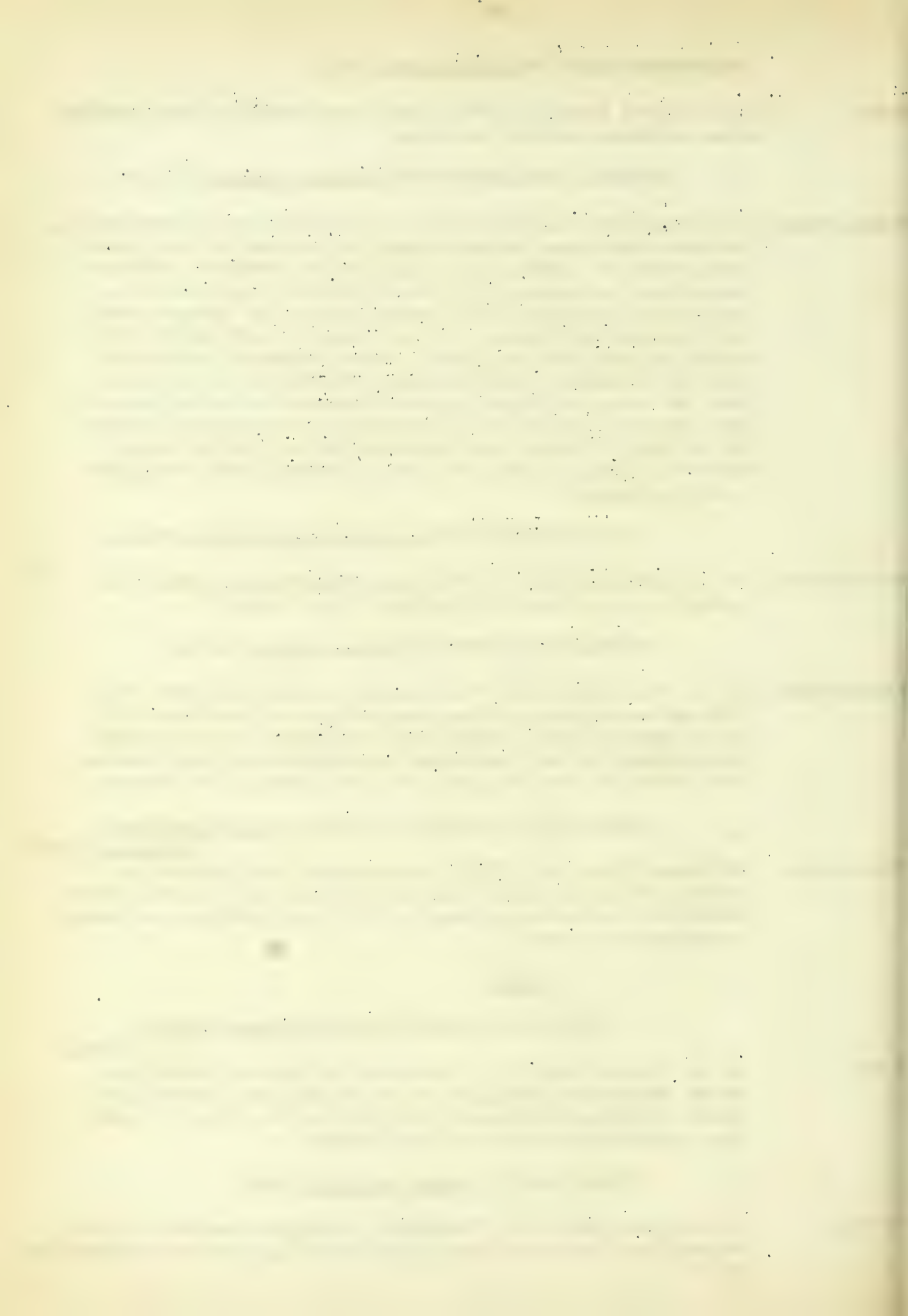
Maine

H. B. Pierson (June 23). "Thousands of acres of poplar are being completely defoliated by the forest tent caterpillar, which is unusually abundant this year as was also the apple tent caterpillar earlier in the season."

POPLAR BORER (*Saperda calcarata* Say)

Nebraska

M. H. Swenk (June 15). "Throughout the period covered by this report (May 15-June 15) the poplar borer has been much complained of."



WILLOW

EUROPEAN WILLOW BEETLE (Plagiodera versicolora Laich.)

Connecticut

F. A. Bartlett. "This pest has apparently come over from New York State. Last year a few were noticed in Greenwich and this year it has been found in Stamford. Many trees are slightly injured while some are nearly defoliated."

New York

E. P. Felt. "The imported willow leaf-beetle occurs generally on Long Island and in southern Westchester County and about the middle of the month had seriously injured groups of willows. The insect occurs on black willow, golden willow, and weeping willow."

Pennsylvania

J.K.Primm (June 8). "Adults, larvae, and nymphs were found in some numbers on two large willows at Chestnut Hill, in Philadelphia County. This is the first record of its occurrence in the State."

INTERRUPTED COTTONWOOD LEAF-BEETLE (Line lapponica L.)

Indiana

F. N. Wallace (June 19). "This insect was observed very abundant, defoliating willows along streams in Morgan and Brown Counties, on May 14 and 15."

H. F. Dietz (June 19). "Has been doing considerable damage to weeping willow and Lombardy poplar in and about Indianapolis. The first brood was reported as doing damage between May 20 and June 10 and the second-brood damage is just beginning."

Iowa

F. D. Butcher (June 18). "Throughout the southeastern quarter of the State, from Decatur County north to Polk and southeast to Wapello, Henry, and Lee Counties, this insect is stripping the willows."



GREENHOUSE AND ORNAMENTAL

PLANT INSECTS

BOXWOOD

BOXWOOD LEAF-MINER (Monarthropalpus buxi Labou.)

- New York E. P. Felt (June 23). "The box leaf-miner is well established on Long Island and in southern Westchester County, occurring in enormous numbers on groups of box and causing serious injury. The flies began to emerge about the middle of May, most of them coming out in immense swarms within a few days, though a few remained in the larval stage until June 16. The best control at Port Chester was secured by using 6 pounds of molasses to 50 gallons of water and making applications every other day."
- New Jersey Richard Häizing (June 1). "This pest is proving quite serious to boxwood at Eatontown and Elberon."
- Pennsylvania J. K. Primm (May 11). "This is the worst pest of box where it occurs and is now invading nurseries and private estates in Montgomery County which were free from it two years ago. Adults began to emerge May 1 in 1921 and on May 8 this year. The dwarf box, Buxus suffructicosa, is nearly immune from attack, but other varieties may be heavily infested. It is now quite generally distributed throughout Philadelphia, Bucks, Montgomery, Chester, and Delaware Counties of this State."

AZALEA

AZALEA LACEBUG (Stephanitis pyrioides Scott)

- Pennsylvania J. K. Primm (May 27). "Marked browning of leaves is noticeable at this early date on hardy azaleas. In 1921 many azaleas were defoliated in southeastern Pennsylvania due to this insect. Specimens of the evergreen varieties succumb to this attack when not sprayed in time. Nicotine sulphate, 1 part, to 500 parts water is an effective control."

LILAC

LILAC BORER (Podosesia syringae Harris)

- New York E. P. Felt. "Mr. R. E. Horsey reports that the lilac borer (Trochilium denudatum) is so serious in the lilac collection in Rochester Parks that it is necessary to go over the bushes carefully to remove breakage."

CHAPTER I

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RHODODENDRON

RHODODENDRON BORER (Sesia rhododendri Beut.)⁺

Connecticut G. H. Hollister (June 22). "This insect was first observed in Hartford Parks this year where occasional branches of rhododendron are infested."

New York E. P. Felt (June 23). "The rhododendron borer is reported as having caused considerable damage in an estate near Rochester. This insect also occurs in the vicinity of New York City."

ROSE

ROSE LEAF-BEETLE (Nodonota puncticollis Say)⁺

Connecticut F. A. Bartlett. "This insect, which seems to be new about Stamford, was identified by Dr. E. P. Felt."

New York E. P. Felt (June 23). "This insect appears to be unusually abundant on roses and was reported as injuring apples in Dutchess County and numerous on roses in southern Westchester County."

ROSE SAWFLY (Caliroa aethions Fab.)⁺

Nebraska M. H. Swenk (June 15). "During the first half of June there was an unusual abundance of European slugs on cultivated roses in eastern Nebraska."

HOUSEHOLD INSECTS

TERMITES (Reticulitermes flavipes Kol.)

- Massachusetts H. T. Fernald (June 22). "White ants were found in a store room in a paper mill at Holyoke; they had attacked a 500-pound case of paper and riddled it so badly that the paper was worthless."
- Indiana J. J. Davis (June 16). "White ants have continued to be reported as damaging houses and woodwork in the southern part of the State."
- Kansas E. G. Kelly (June 6). "These insects were reported as doing rather serious damage to dwellings in Albion, Manhattan, and Admire."

ANTS (Formicidae)

- Michigan R. H. Pettit (June 8). "Ants are very troublesome here this year, both in houses and in lawns. We have discovered a new departure in the preparation of ant poison. Often ant poison made of tartar emetic and honey, 1 part to 19, has failed because the tartar emetic settles to the bottom, especially if the honey has been heated too much. We stir the poison into the honey that is showing a tendency towards crystallizing, now and then add quite a bit of granulated sugar, stirring it in cold to aid crystallization. Honey that is prepared cold in this way and stirred in thoroughly holds the tartar emetic in suspension. Failures in the past have come from the poison settling down either in the container or in the dishes in which the poison has been offered to the ants."

FLEAS (Siphonaptera)

- Indiana H. F. Dietz (June 19). "Fleas have been unusually abundant in private dwellings. An outbreak in Indianapolis proved to be the cat and dog flea, Ctenocephalus canis, and an outbreak in Greenwood, the human flea, Pulex irritans."

A POWDER-POST BEETLE (Lyctus planicollis Lec.)

- New York C. R. Crosby (May 27). "This insect destroyed several dozen shovel handles at Hudson this spring."

DEATH WATCH (Anobium striatum Oliv.)

- New York C. R. Crosby (May 28). "A house at Walcott was very badly infested by this insect working in the woodwork."

ORIGINAL ARTICLES

1. The Effect of the Diet on the Blood Sugar in the Normal Individual. (Continued from page 1000.)
 H. H. HENNING, M.D., and J. H. HENNING, M.D., Chicago, Ill.

2. The Effect of the Diet on the Blood Sugar in the Normal Individual. (Continued from page 1000.)
 H. H. HENNING, M.D., and J. H. HENNING, M.D., Chicago, Ill.

3. The Effect of the Diet on the Blood Sugar in the Normal Individual. (Continued from page 1000.)
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10. The Effect of the Diet on the Blood Sugar in the Normal Individual. (Continued from page 1000.)
 H. H. HENNING, M.D., and J. H. HENNING, M.D., Chicago, Ill.

LARDER BEETLE (Dermestes lardarius L.)

New York C. R. Crosby (June 2). "Rather serious infestations of households in Utica and Skaneateles were reported within the past two days."

BLACK CARPET BEETLE (Attagenus nicaus Oliv.)

New York C. R. Crosby (May 23). "Infesting a house in Buffalo."

Delaware C. O. Foughton (June 15). "This pest seems to be more numerous than usual here this season."

ORIENTAL ROACH (Blatta orientalis L.)

Indiana H. F. Dietz (June 19). "This insect was reported very seriously abundant in the downtown districts of Lyons."

SPIDERS

Ohio H. A. Gossard (May 26). "The manager of a summer hotel at Russell Point, Ohio, reported, May 1. that spiders had so taken possession of his building that he was compelled to seek information as to how to eradicate them."

BLACK FLIES (Simulium spp.)

New York E. P. Felt (June 12). "Mr. G. B. Young reports that these insects are more numerous than they have been for years about Speculator in Herkimer County."

Louisiana T. H. Jones (June). "Adults of this genus were observed to be common at Baton Rouge, especially early in the morning and late in the afternoon up to about June 4, when they apparently disappeared."

MOTTLED MALARIA MOSQUITO (Anopheles punctipennis Say)

Illinois S. C. Chandler (May 20). "The first malaria mosquito clean-up campaign in Illinois is now under way. Adults of this mosquito have been found in considerable numbers and the first adults of A. guttulatus were found on this date at Carbondale."

CHIGGERS (Trombidium sp.)

Mississippi H. W. Allen (June 10). "Red bugs are generally reported as much more numerous and troublesome than last year."

INSECTS AFFECTING MAN AND DOMESTIC
ANIMALS

CATTLE

. . . HORN FLY (Haematobia irritans L.)

New York

E. P. Felt (May 24). "The horn fly is particularly numerous for this time of the year at Bainbridge in Chenango County."

Nebraska

M. H. Swank (June 15). "In western Nebraska there seems to be present an unusual abundance of the horn fly during the present season."

. . . OX WARBLE (Hypoderma lineata DeVill.)

New York

E. P. Felt. "Mr. L. W. Jones reports from Bainbridge in Chenango County that ox warble larvae are very abundant in backs of cattle."

Illinois

C. C. Compton. "Ninety per cent of the young stock in Stephenson County are infested from 3 to 30 warbles each, averaging from 7 to 8 warbles per animal."

POULTRY

. . . ROSE-CHAFER (Macrodactylus subspinosus Fab.)

Massachusetts

H. T. Fernald (June 22). "A complaint of rose-chaffer killing 10-week-old chicks near Springfield has been received. These chicks were apparently normal at night and were found dead the next morning. Examination of the crop showed from 3 to 20 rose-chafers. One chick was fed 16 chafers and died in three hours."

New York

E. P. Felt (June 23). "Mr. R. E. Horsey reports that the rose beetle in the vicinity of Rochester is very numerous on peach trees. A number of chicks died as a result of feeding upon these beetles."

THE HISTORY OF THE CITY OF BOSTON
FROM THE FIRST SETTLEMENT TO THE PRESENT TIME

1780

OF THE CITY OF BOSTON

IN THE YEAR 1780, THE CITY OF BOSTON WAS IN THE POSSESSION OF THE ENGLISH, WHO HAD TAKEN IT IN 1775, AND HAD REMAINED IN POSSESSION OF IT UNTIL 1776, WHEN IT WAS EVACUATED BY THEM, AND RETURNED TO THE POSSESSION OF THE AMERICANS.

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THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

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Number 5

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

OUTSTANDING ENTOMOLOGICAL FEATURES FOR JULY, 1922.

The Hessian fly situation is very favorable over the greater part of the wheat Belt. Reports from Ohio, Illinois, and Indiana indicate a very decided reduction of this pest over last year. For the first time in 15 years this insect is reported from Minnesota, and the worst outbreak in the past 4 years occurred in Iowa this summer. The fly is also quite serious in parts of Nebraska where it will in all probability seriously infest the fall grain.

The chinch bug has proven abundant and destructive in northwestern Ohio, the greater part of Indiana, southern and central Illinois, southeastern Iowa, south-central Nebraska, practically all of Missouri, and the Delta section of Mississippi.

The widespread boll weevil infestation reported in the last number of the Survey Bulletin has decidedly increased in intensity during July. Reports of very heavy infestations have been received from many localities in eastern Texas, southeastern and central Oklahoma, central Arkansas, northern Louisiana and Mississippi, the greater part of Alabama, southwestern Tennessee, and many places in Georgia, South Carolina, and southeastern North Carolina.

The greater wheat-stem maggot is becoming more abundant and injurious than usual in the north-central States, northern Illinois, Minnesota, and North Dakota reporting damage this year, and considerable attention is being attracted by the wheat midge in southern Ohio and Indiana, where this pest seems to be on the increase.

A rather unique armyworm outbreak is under way in central and southern California. Several species, so far undetermined, are involved in this outbreak. The fall armyworm has appeared in rather serious numbers in parts of Tennessee.

The stalk borer is more prevalent than was the case last year. Reports of rather serious infestations have been received from New England, New York, West Virginia, the east-central States, North Dakota, northeastern Nebraska, Missouri, and Mississippi.

The alfalfa weevil, newly reported last year from the western part of Nevada near the California State line, now occurs throughout the Lovelock Valley in Pershing County, north of the Reno infestation. In southern and eastern Idaho it seems to be less abundant, possibly owing to the hymenopterous parasite which is on the increase in this region. In southwestern Idaho the weevil is extending its range and is reported from Canyon County.

During the latter half of June and early July reports of a root curculio attacking soy beans in Indiana, Missouri, and Illinois were received. At the time of the issue of our last Bulletin these were believed to be Sitona hispidulus Fab. (See Vol. 2, No. 4, page 115.) Specimens have since been received by the Bureau and determined by Dr. E. A. Schwarz as Sitona crinita Hbst. This is a common European species and is possibly a quite recent introduction into this country.

Grasshopper outbreaks in Wisconsin, Nebraska, Montana, and Idaho have been reported. Less serious local depredations are reported from Mississippi, northern Indiana, and Iowa.

Aphid infestations in apple orchards are reported as very severe in Ohio. Aphids are also numerous in Massachusetts, Connecticut, and a few places in New York and Missouri.

Very dry weather in Washington and Oregon is held to be responsible for aggravated codling moth infestation in these States.

The fruit-tree leaf-roller is reported as injurious for the first time in several of the apple-growing sections of Idaho.

The San Jose scale appears to be still on the increase in Indiana, Iowa, Missouri, Arkansas, and Georgia.

The spotted cutworm is reported from Massachusetts as seriously damaging onions in parts of the Connecticut Valley onion region, the invasion of the onion fields usually following the mowing of near-by sodland.

The fall webworm is reported as more abundant and injurious than noted heretofore at this time of the year in Mississippi. It is also appearing in considerable numbers in Louisiana, eastern Nebraska, and parts of Iowa.

Thousands of acres of pine in northwestern Wisconsin are infested by an undetermined species of *Olene*.

A very large shipment of imported parasite material was received this spring at the Bureau of Entomology's Japanese beetle laboratory in New Jersey.

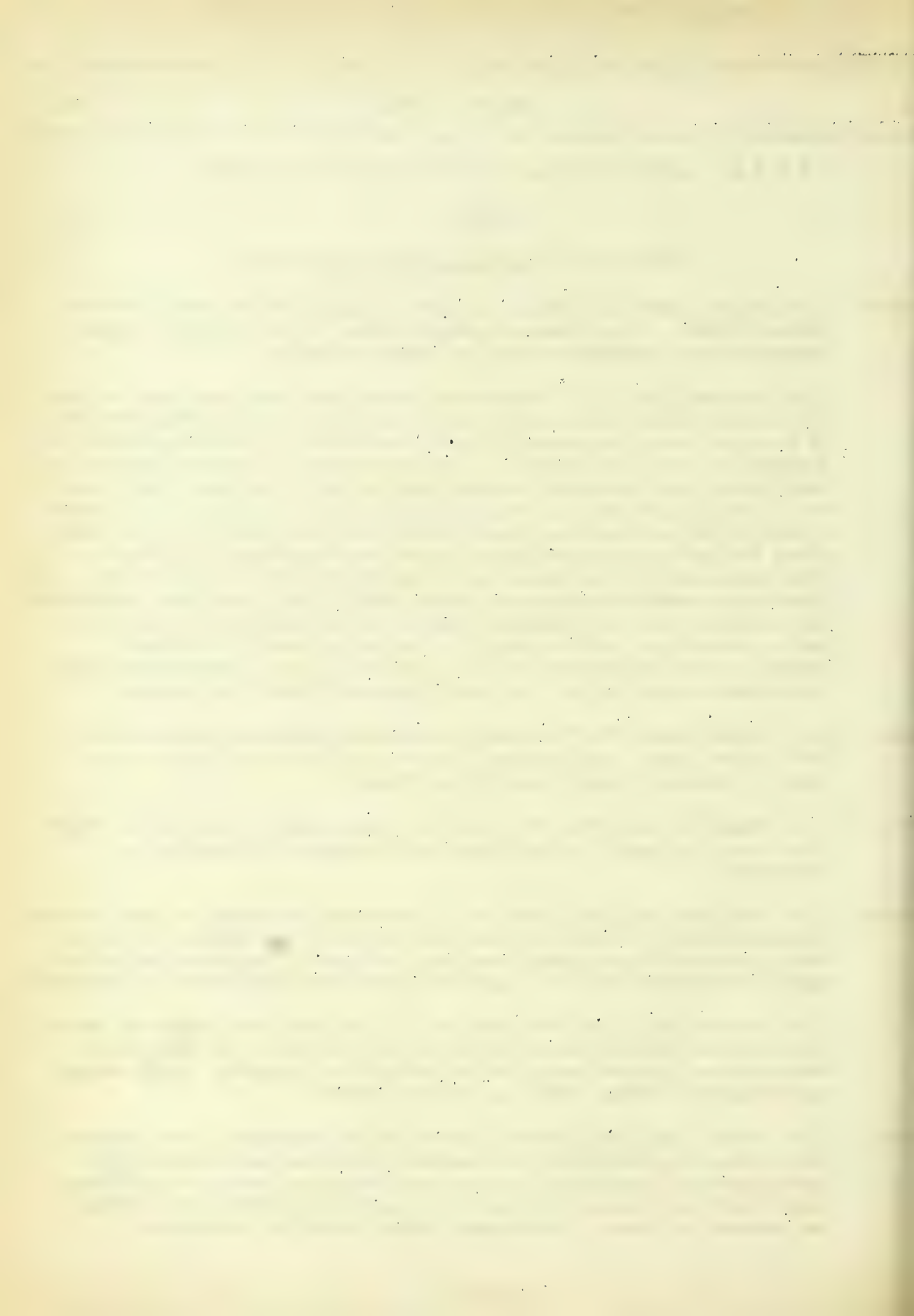
The Australian tomato weevil, reports of which have been published in the last two numbers of the Survey Bulletin, is the insect described by Lea under the name of *Desiantha nociva*. However, our most recent information on this pest indicates that it belongs to the large complex known as *Listroderes*, a complex containing several distinct genera, one of which is *Listronotus* Jek. The species *nociva* does not belong to *Listronotus* as recognized by LeConte, of which there are 20 species in North America. It is more closely related to several South American *Listroderes*. Although the pest undoubtedly does not belong to the genus *Desiantha* we believe it will be advisable to adhere to this name until future studies of the *Listroderes* complex are published.



CEREAL AND FORAGE CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

- York L. C. Tyler (June 23). "Wheat is already going down in many fields in Genesee County. The insects are now largely in the flaxseed stage. Apparently the infestation will be quite serious."
- H. A. Gossard (July 21). "State-wide survey was completed late in June and indicated that the Hessian fly has been reduced to normal numbers (1 to 5 per cent infestation) in all counties of the State, except the northwestern 15 or 20 counties. The percentage of infestation here was much lower than last year, varying from 10 to 30 per cent where wheat was seeded as advised. In every instance: where wheat had been seeded a week or two earlier than the fly-free date the infestation ran from 80 to 100 per cent, while fields seeded at the advised time ran in every case with but one exception below 20 per cent. In Williams County the average infestation ranged from 20 to 30 per cent, even though the fly-free date was generally heeded; we probably missed the date by two or three days in this county, or possibly the old volunteer stubble fields contributed to the high infestation. Parasitism seems to be very high in all of the badly infested fields this season."
- ana J. J. Davis (July 20). "No heavy infestations found in the northern half of the State; examinations show 5 to 50 per cent infestation, usually ranging between 5 and 15 per cent."
- nois C. C. Compton (June 17). "In Kendall County general infestation ranges from 5 to 8 per cent; in one field a 50 per cent infestation was discovered."
- esota A. G. Ruggles (July 19). "The first authoritative report of this insect in Minnesota in the past 15 years was received this month. A winter wheat field in Carver County was badly infested. No other complaints have been received and it is possible that the infestation is localized."
- F. A. Fenton (July 15). "The Hessian fly had done more damage to wheat in Iowa than for four years and is on the increase. In some places wheat has not yielded more than 10 bushels to the acre. Heavy damage has resulted wherever wheat was planted early."
- aska M. H. Swenk (July 15). "Harvest revealed the presence of the Hessian fly in moderate abundance over southern Nebraska, and in some localities in large enough numbers to do material damage to the wheat crop; such local centers of more than moderate abundance and injury are present in Dakota, Washington, Dodge, Saunders, Seward and



Furnas Counties. In these places the Hessian fly may be regarded as a menace to the wheat crop to be sown this fall.

GREATER WHEAT-STEM MAGGOT (Meromyza americana Fitch)

W. P. Flint (July 18). "This insect has been quite abundant in northern Illinois. Injury reported from several localities in spring wheat and barley; more abundant than usual in central and northern Illinois in winter wheat, apparently working more in the bearded than in the smooth varieties."

A. G. Ruggles (July 17). "The wheat-stem maggot seems to be doing considerable damage in the State this year."

R. L. Webster (July 15). "Reports of white-head in wheat have been common; most of them appeared to be due to this insect."

WHEAT MIDGE (Contarinia tritici Kirby)

H. A. Gossard (July 21). "In several of the southern counties the wheat midge was found to be very numerous, and damage to the crop was high in 3 or 4 counties, some fields possibly damaged 50 per cent and many others to a lesser extent. This insect seems to be distinctly on the increase over the southern half of the State."

J. J. Davis (July 20). "We are getting a few reports from farmers who find the larvae in thrashed wheat. Apparently no great damage."

JOINTWORM (Harmolita tritici Fitch)

W. P. Flint (July 18). "Infestation in south-central and southern Illinois much more numerous than usual."

FRIT FLIES (Oscinis spp.)

R. L. Webster (July 15). "There was considerable damage to some of the wheat plats on the College grounds this year. Adult flies are still emerging. At least two species are involved in the outbreak."

EUROPEAN WHEAT SAWFLY (Cephus pygmaeus L.)

C. R. Crosby and J. B. Palmer. "A survey was carried on from July 7 to July 14 in western New York, to ascertain the abundance of the European wheat sawfly. This pest was found to be abundant in parts of Wyoming, Genesee, Erie, Niagara, Orleans, Monroe, Wayne, Cayuga, Oswego, Onondaga, and Tompkins Counties."

PALE WESTERN CUTWORM (Perosagrotis orthogonia Morr.)

A. L. Strand (July 1). "This insect is much less abundant than during usual years. A loss of between 10 and 15 per cent of the total seeded area, which is a decrease of more than 18 per cent

from the loss occasioned in 1921, is shown in Hill County this season. Small losses have occurred in Liberty and Tootle Counties, but they amount to nothing in comparison with the losses occasioned during the past several years. Through many sections of central and northern Montana, the worst infested part of Montana since 1915, no pale western cutworm damage has been suffered."

ARMYWORMS (species undetermined) *

California Weekly News Letter, California Department of Agriculture (July 1). "Reports have been received of outbreaks of armyworms from the Counties of Tuolumne, El Dorado, Fresno, Amado, and San Luis Obispo. The armyworms are largely hatching on uncultivated areas or in orchards in which weeds have been allowed to grow. They travel rapidly and destroy the cultivated crops and young trees in their path... Investigation of the outbreak and specimens sent to the State Laboratory show that several species are involved in this destructive work."

WHEAT-HEAD ARMYWORM (Neleucania albilinea Huebn.)

Minnesota A. G. Ruggles (July 19). "The wheat-head armyworm has been doing considerable damage in different parts of the State."

CCRN

CHINCH BUG (Blissus leucopterus Say)

H. A. Gossard (July 21). "Chinch bugs were found to be quite numerous over 8 or 10 northwestern counties, centering from Defiance County eastward. Abundant rains lately seem to have put considerable check upon chinch bugs and we have heard less of them than we expected."

Indiana J. J. Davis (June 20). "Considerable damage in the State by this insect. Farmers failed to heed warning until too late to effectively control it in many sections. In some sections where county agents organized in time effective controls were secured, Conditions up to the present time favorable for the second generation."

Illinois W. P. Flint (July 18). "Infestation now found to cover all but about 25 counties in north and northwestern Illinois. General flight of first-brood adults now taking place and second-brood nymphs beginning to appear. In southern Illinois a few localities have had sufficient rain to decrease the number of bugs. In most parts of central Illinois rainfall has not been sufficient to affect these insects."

F. A. Fenton (July 15). "The chinch bugs are still doing damage in Lee County, but the situation is well in hand. They have appeared in several other localities, but have been especially destructive in Wayne County, where they are present in the corn now and are doing a tremendous amount of damage."

The most prevalent species has been determined by Mr. Wm. Schaus as Prodenia praefica Grote.

Fred D. Butcher (July 20). "In addition to the before-mentioned counties, chinch bugs are doing considerable damage in Henry County."

Nebraska

M.H.Swenk (July 15). "A moderate outbreak has developed in south-central Nebraska from southern Gage County along the southern boundary of the State of Harlan County, the center of severity being in Thayer and Nuckolls Counties. During the last week in June this pest had deserted the ripening barley and wheat and made its way into the cornfields. Such migrations continued until about July 5, when most of the cornfields that were subject to the attack had been invaded. The usual loss of corn in the invaded fields up to the middle of July was from 2 to 5 acres on the side of the field nearest to the barley or wheat, but the damage to this extent is common enough to make a serious reduction in the corn yield of the 7 counties concerned. Reports of a local outbreak in Dawes County were received. It remains to be seen how serious the threatened outbreak in Knox and Boyd Counties will be during the latter part of July."

Missouri

A. C. Burrill. "The chinch bug is much worse than usual in Adair, Macon, Knox, and Sullivan Counties. In many cases from 10 to 100 acres of corn in a single block totally destroyed by these insects. Present indications are that 8 of the previously lightly infested counties will lose at least 500,000 bushels of corn. In the northern tier of counties there is little or no damage, the second tier southward will lose approximately 500,000 bushels of corn, the third tier will lose perhaps 1,000,000 bushels, and the fourth tier about the same, the fifth and sixth tiers will lose several millions, and the seventh or eighth tiers but little less."

Mississippi

R. W. Harned (July 18). "Still abundant in the Delta section of Mississippi. Complaints have been received especially from Coahoma, Tunica, Quitman, Panola, Bolivar, Sunflower, Washington, Leflore, Carroll, and Sharkey Counties. Many people report that the chinch bugs have never before been so numerous. In fact, this is the first time that many people on the infested farms have ever even noticed the chinch bugs."

BOLLWORM (*Heliothis obsoleta* Fab.)

Nebraska

C. O. Houghton (July 15). "Sweet corn is being injured considerably by this species."

Ohio

H.A.Gossard (July 21). "Specimens of the corn earworm were found in Ross County in June, and some of them had pupated two or three weeks ago. Apparently this insect will be quite numerous again this season."

Illinois

W. P. Flint (July 18). "Larvae have been taken on beans in central Illinois."

Mississippi

R.W.Harned (July 18). "The bollworm is attracting about the normal amount of attention as a pest of cotton, corn, and tomatoes. It is usually fairly abundant in all parts of Mississippi."

FALL ARMYWORM (Laphygma frugiperda S. & A.)

- ennessee S. Marcovitch (July 27). "Three isolated infestations were found in McNairy County. About 50 per cent of a 25-acre field in one place was completely destroyed. The rather wet spring may account for the present outbreak."
- STALK-BORER (Papaipema nitela Cuen.)
- Massachusetts H. T. Fernald (July 12). "The common stalk-borer is being reported from several parts of the State, and is evidently normally abundant. It has also been reported attacking dahlias and hollyhocks this year. County Agent of Berkshire County reported that 50 per cent of the hills in sweet cornfields were infested."
- Connecticut B. H. Walden (July 21). "This insect has been found more abundant than usual at Hampden and Bethel. In the last place Mr. Charles D. Clark reports a serious infestation of sweet corn."
- New York C. R. Crosby (June 30). "This insect has been found attacking a great number of garden flowers in Broome and Putnam Counties, among which are iris, peony, hibiscus, gladiolus and columbine; they have also been observed attacking peppers and tomatoes."
- Virginia L. M. Peairs (July 5). "This insect has been reported from various places in the State where it is attacking corn, beans, strawberry stems, wheat, castor beans, and several weeds."
- H. A. Gossard (July 21). "We have received a great number of specimens of the common stalk-borer in corn. Many of these are sent in by farmers who mistake this larva for the European corn borer."
- Diana J. J. Davis (July 20). "This insect continued to be the subject of inquiries the past month. Injury has been to tomatoes and corn as a rule."
- Illinois W. P. Flint (July 18). "Larvae have been unusually abundant this year. Injury has already been reported from a number of localities, most of the damage being done to corn and peas."
- F. A. Fenton (July 18). "The stalk-borer continues to be very destructive to corn and has also been reported from several other plants. Probably 30 per cent of our correspondence is concerning this pest, which is now usually in the last larval stage."
- R. L. Webster (July 12). "This insect is said to be causing much damage to young boxelder trees as well as corn, tomatoes, and flower plants."
- Nebraska M. H. Swenk (July 15). "In the extreme northeastern Nebraska Counties, Knox, Cedar, Dixon, Dakota, and Thurston, and during the last ten days in June and the first few days in July there was an unusual amount of injury to corn, oats, and potatoes by the caterpillars of the stalk-borer. The injury to potatoes in Dakota County was in some fields very severe."

Missouri A. C. Burrill (June 30). "This insect is very serious in parts of Knox, Sullivan, and Adair Counties, one man reporting that every tomato plant set out was destroyed by this insect."

Mississippi R. W. Harned (July 18). "The stalk-borer seems to be more abundant than usual this year."

... ARMYWORM (Cirphis unipuncta Haw.)

Illinois W. P. Flint (July 18). "Adults becoming very abundant in the central part of the State, but show only in moderate numbers in southern and northern Illinois."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

North Carolina Franklin Sherman (July 21). "The larger corn stalk-borer is apparently more abundant than normally."

... SUGAR-CANE BEETLE (Euateola ruficeps Lec.)

Mississippi R. W. Harned (July 18). "Complaints continue to be received in regard to the rough-headed corn stalk-borer. In most cases these insects are injuring corn."

... CORN ROOT APHID (Aphis maidi-radici Forbes)

Indiana J. J. Davis (July 20). "The corn root aphid has been the subject of an unusual number of inquiries."

... EUROPEAN CORN BORER (Pyrausta nubilalis Huebn.)

New York E. P. Felt (July 21). "Recent examinations in the eastern area indicate nearly identical conditions as regards infestation with those of last year with the possible exception of a greater degree of infestation in the areas where the insect was most abundant. There appears to have been comparatively little increase in numbers in the surrounding more sparsely infested territory. Third and fourth stage larvae were being found from the middle to the 20th of July."

... CORN-SILK BEETLE (Luperodas varicornis Lec.)

Louisiana T. H. Jones (July 7). "An outbreak of this beetle occurred at Eden in LaSalle Parish. The injury was apparently largely confined to hill land, and here the beetle had kept the silk eaten off to such an extent that few if any kernels had formed. The ears will not be worth gathering in the fields where the beetles have been abundant. Beetles were said to appear late in April and early in May, and at the time of my visit were disappearing. It is said that it is not possible to raise a crop of early corn in this particular section. Late corn, silking after the beetles disappear, is advisable on this account. These beetles also feed on the tassels."



GRAPE COLASPIS (Colaspis brunnea Fab.)

Minnesota A. G. Ruggles (July 19). "In the southeastern county of the State our Mr. Mickel found this beetle doing considerable damage in cornfields."

WHITE GRUBS (Phyllophaga spp.)

Wisconsin S. B. Fracker (June 26). "Well grown larvae of the 1923 brood common in the southern part of the State. Adults of other broods reported in Juneau County and several localities in the northern section."

ALFALFA

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

Idaho Claude Wakeland & D. B. Whelan (June 15). "This insect is less abundant than in 1921 in eastern Idaho where it has been on the decrease for the past three years. In southern and eastern Idaho the numbers of Bathyplectes curculionis Thoms. have increased greatly. The inference would be that natural enemies are aiding in reducing the number of weevils. In southwestern Idaho, the amount of injury varying from very slight to more than 50 per cent of the first crop. In this part of the State the insect is spreading. The great overlapping of the egg and larva stages in this region makes control work less effective and it may prove necessary to adapt a two-spray method of control. The pest is just becoming established in Canyon County."

Nevada G. I. Reeves. "Mr. K. N. Pack reports finding weevils in a field at Lovelock, in Pershing County, on June 21."

C. W. Creel. "Mr. Eldon Wittmer has just completed a survey in the Lovelock Valley and finds the weevils in rather large numbers on four ranches. These ranches are several miles apart, indicating a general distribution of the weevils in this valley."

SPOTTED BLISTER BEETLE (Epicauta maculata Say)

Idaho Claude Wakeland (July 3). "County agent reports adult blister beetles as doing serious injury to blossoms and seeds of Grimm alfalfa. The specimens sent me are tentatively determined as Epicauta maculata."

PEA APHID (Illinoia pisi Kalt.)

Illinois W. P. Flint (July 18). "This insect has been increasing during the last month and at present is killing clover in several counties in central Illinois."

Indiana A. L. Strand (June 11). "On May 29, specimens of this aphid were sent in from Park City, where they were reported causing serious damage to alfalfa. By June 2, it was estimated that the crop in many alfalfa fields in that district was cut down 75 per cent."

About this time numerous lady-beetle larvae were noticed in the fields, and by the 11th of June the aphid infestation had been practically cleaned up by them."

GARDEN WEBWORM (Loxostege similalis Guen.)

iana J.J.Davis (July 20). "A webworm, apparently Loxostege similalis, has just been received from Shipshewana in the extreme northern end of the State where it is reported as damaging alfalfa. The same species was responsible for injury to alfalfa in this locality last year."

SOYBEANS

SOYBEAN ROOT CURCULIO (Sitona crinita Hbst.)

iana J.J.Davis (June 27). "This insect has been reported from Clinton and Howard Counties as injuring soybeans. I recall last year having received a letter from a correspondent in Clinton County advising us that this insect was doing considerable damage to soybeans. These beetles were not recognized when collected. Specimens sent to the Bureau of Entomology were determined by Dr. E. A. Schwarz as above, with a statement that this is a common European species and probably a rather recent importation."

ouri A.C.Burrill (June 23). "Adult beetles resembling the Sitona destroyed 60 per cent of the foliage of soybeans planted in corn following the turning under of blue-grass sod. Specimens of this insect were received by Dr. Heseaman from another locality in Missouri doing similar damage. This material was sent to the Bureau of Entomology and was tentatively determined as Sitona crinita Hbst."

NOTE: The notes appearing under Clover-Root Curculio, Sitona hispidulus Fab. in Volume 2, No. 4, page 115, of the Insect Pest Survey Bulletin, without a doubt refer to this insect.--J.A.Hyslop.

GENERAL FEEDERS

GRASSHOPPERS (Acridiidae)

iana J. J. Davis (July 20). "Grasshoppers have been reported recently injuring alfalfa in the northern end of the State."

F.A.Fenton (July 15). "The differential grasshopper, Melanoplus differentialis Thod., has been destructive in Shelby County and the two-striped grasshopper, Melanoplus bivittatus Say, has occasioned damage to crops in the southwestern counties of the State."

Fred D.Butcher (July 20). "A small outbreak of grasshoppers occurred in Page County late in June. They were successfully controlled by poisoned bran mash."

sonsion E. L. Chambers (June 28). "A very severe outbreak of grasshoppers is under way in Door, Marinette, Forest, Florence, and Oneida Counties. The infested area extends farther west than last year, covering

several townships in Price County. Over 10,000 bushels of poisoned bran mash have already been distributed."

Nebraska M.H.Swenk (July 18). "Grasshopper injury continues most serious in Scottsbluff, Morrill, Sheridan, and Sioux Counties in western Nebraska. A serious local outbreak in southeastern Washington County developed late in June."

Montana A.L.Strand. "The two-striped grasshopper has increased enormously through the Yellowstone Valley and is causing considerable damage, especially to alfalfa."

A. L. Strand. "The clear-winged grasshopper, Camnula pellucida Scudd., is especially abundant throughout the Marias River counties which were very dry last season (Glacier, Toole, Pondera, Liberty, and Chouteau Counties). As one proceeds farther southward the number of warrior grasshoppers decreases and the lesser migratory grasshopper Melanoplus atlantis Riley preponderates. This last-named grasshopper is very abundant throughout the sections of northern and eastern Montana in Hill, Blaine, Chouteau, Cascade, Phillips, Valley, and Lewis and Clark Counties. In some places many of the hoppers of this species are already winged, while in other localities they have just hatched."

Idaho Claude Wakeland (July 3). "In the vicinity of Rexburg they had serious trouble with grasshoppers, and it is quite probable that the unusual abundance of blister beetles observed this year is connected with this grasshopper outbreak."

Idaho & Utah H. J. Pack (July 26). "The black cricket (Anabrus simplex Hald) has reappeared in Utah and Cache Counties and even in greater numbers just over the State line in Idaho where a strip of country at least 5 miles wide and fifteen miles long is infested. Farmers and business men have joined in "cricket drives" pending the outcome of poisoned bait experiments."

Utah C.W.Creel (July 10). "County agent of Elko County reports grasshoppers coming off the foothills and invading cultivated lands in South Fork, Lamoille, Starr, and Metropolis Valley. The majority of these grasshoppers are still wingless. In some wheat fields the crop has been totally destroyed."

Mississippi R.W.Harned (July 18). "The differential grasshopper is causing considerable damage at different places in Mississippi. In Tallahatchie County 25 acres of soybeans have been almost wholly destroyed and they were working in a 250-acre field. In Monroe County the grasshoppers were destroying everything in a garden, including potatoes, tomatoes, and beans."

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeG.)

- Massachusetts H. T. Fernald (July 10). "The rosy apple aphid is now disappearing from the apple and the green apple aphid is becoming abundant, particularly on young trees."
- Connecticut W. E. Britton (June 27). "Mr. H. L. Johnson, county agent of New London County, reports that aphids are very abundant this season and have done much damage in apple orchards."
- New York C. R. Crosby and assistants report that this insect continues to be abundant in Ulster, Monroe, Niagara, and Orleans Counties but is not particularly serious."
- Missouri A. C. Burrill (June 20). "This insect is more abundant than usual about Columbia."
- Idaho H. A. Gossard. "One outstanding feature of the season has been the severe infestation of aphids in apple orchards. Several orchardists have reported to us that they have never experienced such a severe outbreak of aphids and have found it almost impossible to check them by means of spraying or dusting. At present natural enemies are abundant."
- Mississippi R. W. Harned (July 10). "Messrs. H. W. Allen and F. M. Hull report that earlier in the season this insect was abundant enough to roll the terminal leaves of 2-year old trees. They had largely disappeared by this date."

ROSY APPLE APHID (Anuraphis roseus Baker)

- Massachusetts H. T. Fernald (July 10). "This aphid has now disappeared from the apple trees."
- Connecticut W. D. Clark (July 20). "Aphid injury is particularly noticeable on Baldwin trees, especially so on trees having a heavy set of fruit; apples small and misshapen."
- New York E. V. Shear (June 24). "Rosy aphid has migrated from apple trees but has left many orchards with from 50 to 60 per cent of the trees injured in Ulster County."

CODLING MOTH (Carpocapsa pomonella L.)

- New York C. R. Crosby and assistants report that from the middle of June to the 1st of July codling moths were ovipositing in Monroe, Orleans, and Niagara Counties. With but few exceptions all of the growers had completed the codling moth spray by June 28."
- Delaware C. O. Houghton (July 15). "Moths of the summer brood are now emerging about Newark."



H. A. Gossard (July 21). "The first codling moth to emerge in our cages at Wooster came out July 20, which indicates that they may be expected to appear about the normal time."

J. J. Davis (Special Information Letter, Purdue University, June 30). "A study of the conditions in several sections of Indiana shows that the first larvae of the second brood of the codling moth will issue from Mitchell and Vincennes southward about July 4, from Bloomington about July 7, from Noblesville about July 11; from Ft. Wayne July 15, and in the extreme northern section of the State July 21."

A. C. Burrill (June 20). "Full grown worms are already spinning cocoons though some are to be found on apples on the trees. Unsprayed trees show fruit about 50 per cent infested."

E. J. Newcomer (July 7). "The continued hot weather in June caused the fruit to grow very rapidly but also caused the first brood of codling moths to develop early with the result that the ordinary spraying practice (two cover applications two to three weeks apart) was inadequate and the fruit is wormier than usual in the Wenatchee and Yakima Valleys."

A. L. Lovett (July 18). "While generally the adult codling moths of the first generation were less numerous than usual, high temperatures and excessive drought conditions have apparently produced ideal egg-laying conditions. Situation would be serious but for the fact that the majority of infested apples may be removed and destroyed in connection with thinning. Eggs laid from June 14 to July 5; first moth of second generation emerged July 17; about 10 per cent of the first brood worms left the fruit about July 12 in the Willamette Valley."

FRUIT-TREE LEAF-ROLLER (Cacoecia arcuipennis Walk.)

C. R. Crosby and assistants. "The moths of this insect appeared about the middle of June, large numbers having been observed in Niagara and Orleans Counties from June 14 to June 20."

A. L. Strand (July 7). "Fruit-tree leaf-roller still continues to be injurious in unsprayed orchards in the Bitter Root Valley."

Claude Wakeland (June 27). "This insect is doing considerable damage for the first time in a large commercial orchard at Rexburg. Mr. Earl Dickerson reported on June 4 that it was discovered for the first time in Apple Valley and Mr. Skuse reported on June 10 that it was discovered for the first time at Lewiston."

UNICORN PROMINENT (Schizura unicornis S. & A.)

R. W. Harned (July 12). "Mr. Kimble Harman sent in a number of specimens of this insect from Long Beach with a statement that they were feeding on apple foliage."

APPLE AND THORN SKELETONIZER (*Homorophila peniana* Clerck)

Connecticut Phillip Gannan (July 21). "Second-brood larvae appeared in large numbers, especially in unsprayed trees in New Haven County."

B. A. Porter (July 24). "Many trees with foliage badly injured about Wallingford. Many of the second-brood larvae have spun cocoons."

York E. P. Felt (July 21). "Second-brood larvae and rather bad skeletonized leaves were sent in July 12 from Ulster Park, indicating a thoroughly established and, presumably, heavy infestation."

FALL WEBWORM (*Hyphantria cunea* Drury)

York G. E. Smith (June 14). "Young fall webworms found today in orchards in Orleans County."

Jersey R. Huizing. "This insect was found the latter part of June at Hollywood, Hampton, and New Brunswick, and throughout Sussex County."

Pennsylvania S. W. Frost (July 19). "Since the last of June these worms have made their appearance and are numerous in poorly sprayed orchards."

Indiana J. J. Davis (July 20). "The common fall webworm has been found abundant in a few apple orchards of this State."

APPLE LEATHOPPER (*Typhlocyba* spp.)

Ware C. O. Houghton (July 17). "These insects are much less numerous than usual."

Pennsylvania S. W. Frost (July 19). "Injury serious on apples in part of Adams County. This injury was first noticed about the middle of June, the species involved being *Typhlocyba rosea* L."

H. A. Gossard (July 21). "These hoppers are causing some anxiety among orchardists. The two species which attracted attention in this State are *Empoasca mali* LeB. and *Erythroneura obliqua* Say."

SAN JOSE SCALE (*Aspidiotus perniciosus* Comst.)

Massachusetts H. T. Fernald (July 21). "We seem to be having practically a normal season for scale insects, nothing unusual having been seen or reported."

York A. L. Pierstorff (June 17). "Young scales were observed on this date in Monroe County. The scales are present in moderately large numbers."

Jersey R. Huizing. "San Jose scale observed the latter part of June at Hampton and Lakewood."

Indiana J. J. Davis (July 20). "Many apple trees in the State are dying on account of the San Jose scale. Some orchards which were slightly infested a year ago are now encrusted and some trees already dead."

F. A. Fenton (July 15). "A survey made during the month of June on the distribution of this pest in Iowa revealed the fact that it is on the increase and is now found in Lee, Van Buren, Wapello, Mahaska, Henry, Louisa, Muscatine, and Scott Counties."



- Missouri A. C. Burrill (May 31). "Bad infestation found at Maryville."
- Arkansas J. W. Roberts (July 7). "In northwestern Arkansas many trees have been killed by the scale and large numbers have been greatly weakened. Undoubtedly, this has caused a hyper-susceptibility to certain diseases, particularly leaf spots."

EUROPEAN RED MITE (Paratetranychus pilosus C. & F.)

- Connecticut Phillip Garman (July 21). "Heavy rains since the middle of June have considerably reduced the numbers of this pest in New Haven County."
- Pennsylvania S. W. Frost (July 19). "The red spider has become very evident throughout Adams County and is serious in some orchards. Orchards dusted with 90-10 or with 2 per cent nicotine dust show no control while plots treated with lime-sulphur show very little of the red spider."
- Washington E. J. Newcomer (July 10). "The orchard red spider is particularly abundant in some orchards in the Yakima Valley on pear and prune trees and will do considerable damage unless growers are successful in combating it."

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

- New York C. R. Crosby and assistants. "Pear psylla infestation in the apple growing sections of New York is normal or below normal and sprayed orchards are relatively clean. Second-brood nymphs began to appear about the middle of June, summer spray being applied the week of June 26. Observations cover Monroe, Niagara, and Orleans Counties."
- E. P. Felt (July 21). "Very injurious in some orchards in southern Rensselaer and northern Columbia Counties."

PEAR-LEAF BLISTER MITE (Erionhyes pyri Pgst.)

- New York C. R. Crosby and assistants report slight infestations in Dutchess and Orange Counties.
- H. A. Gossard (July 21). "This pest has been received several times on apple foliage as well as on pear leaves. This is unusual for Ohio."
- Indiana J. J. Davis (July 20). "The pear-leaf blister mite was reported as damaging pears at Wawaka."

PEACH

FLOWER THRIPS (Euthrips tritici Fitch)

- Indiana J. J. Davis (July 20). "The flower thrips was responsible for much injury to peaches this season in southern Indiana. The deformed peaches were very conspicuous when they were the size of a quarter. Some injury of this nature was noticed last year but it is more noticeable and general the present season."



A SCARABAEID BEETLE (Serica trociformis Burm.)

North
Carolina

(Bureau of Entomology Monthly Letter No. 98). "Mr. J. B. Cill reports that considerable damage to the foliage of young trees occurred during the early spring, reports having been received from Aberdeen, Southern Pines, Pinehurst, and Candor, N. C., and also from Cheraw, S. C. These beetles were frequently taken in jarring trees for the curculio but the injury to older trees was not serious. This species is a nocturnal feeder, occurring in great numbers in some of the young peach orchards. They usually burrow into the soil to a depth of one inch near the crown of the trees during the day."

FIRE ANT (Solenopsis geminata Fab.)

North and

South Carolina

(Bureau of Entomology Monthly Letter No. 98). "A species of ant, which is believed to be the above, is proving very troublesome to peach trees set this year on recently cleared woodland in the sand hills of North and South Carolina. These ants cut the foliage and carry the bits of leaves into their nests. Damage by ants is greatly reduced by the frequent stirring of the soil in cultivation and for all practical purposes this seems to be a satisfactory control. Orchards set out on old lands do not appear to be troubled at all by ants."

GREEN SOLDIER-BUG (Nezara hiliaris Fitch)

Georgia

O. I. Snapp (July 1). "The green soldier-bug has been unusually abundant in the peach belt this year and some injury has been noticed in orchards, where these insects suck the juice from the unripe fruit."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia

O. I. Snapp (July 15). "The San Jose scale is apparently increasing rapidly in the Georgia peach belt. Poor results were obtained in many cases last winter with the dormant spray. A large quantity of proprietary compounds was used and in many cases may be responsible for the poor control."

CHEERRY

CHERRY FRUIT MAGGOT (Rhagoletis cingulata Loew)

New York

D. D. Ward (June 24). "Very few fruit flies have been observed in the cherry orchards of Onondaga County this season."

Oregon

A. L. Lovett (July 18). "Nearly 100 per cent of Lambert and Late Duke cherries in the upper end of the Willamette Valley show maggot injury. Earlier white flesh varieties are attacked but the maggots are scarce at picking time and not conspicuous in the white flesh."

SAY'S BLISTER BEETLE (Pomchopoea sayi Lec.)

New York

C. R. Crosby. "The latter half of June reports of damage to cherries by this insect received from Wyoming, Onondaga, Yates, Steuben, and Monroe Counties. Mr. A. L. Pierstorff reports that many cases of serious infestation were observed in the southern half of the latter County."

P. J. Parrott (June 17). "In some instances this insect is completely destroying the blossoms of wisteria, spiraea, roses, and privet. Tests with barium and lead-arsenate show that the insects succumb to arsenicals within thirty-five hours after treatment."

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- Massachusetts E. R. Farrar (May 20). "First beetle of the season observed at Lincoln on this date."
- Island A. E. Stene (July 18). "I have seldom seen a year in which the curculio has been more abundant and destructive."
- Connecticut W. E. Britton and assistants. "The plum curculio is reported as seriously abundant in New London, Fairfield, and New Haven Counties."
- York L. F. Strickland (June 17). "This pest is not as abundant as usual in Niagara County."
- C. R. Crosby and assistants. "Considerable damage has been reported to cherries, plums, and prunes from Ulster and Genesee Counties."
- Jersey R. Huizing (June 22). "This pest was observed injuring apple at Lakewood."
- Georgia O. I. Snapp (July 15). "The first curculio adult of the second generation transformed yesterday at Fort Valley. The second generation will be small this year on account of the excellent control of the first generation. One of the best peach crops ever produced in Georgia has been harvested this year. The results of the curculio suppression are remarkable. All the varieties, especially the late ones, were very free from worms and feeding marks. Average infestation amounted to one wormy peach to 5/8 bushel basket. In a number of orchards where fruit was cut to obtain percentage infestation the curculio infestation in drop peaches during 1922 shows a reduction of 22.6 per cent from what it was one year ago."

A SCARABAEID (Serica anthracina Lec.)

- regon A. L. Lovett (June 14). "Adult beetles appeared in great numbers and seriously defoliated prune trees in a small fruit section in Polk County."

PLUM WEB-SPINNING SAWFLY (Neurotoma inconspicua Norton)

- braska M. H. Swenk (July 15). "During the last week in June in Colfax and Platt Counties the plum trees were badly defoliated by the plum web-spinning sawfly."

BROWN PLUM APHID (Hysteroneura setariae Thos.)

- Wisconsin S. B. Fracker (June 25). "Damage by this pest is reported from Dane and Green Counties."

RASPBERRY

RASPBERRY CANE-BORER (Oberea bimaculata Oliv.)

- ode Island A. E. Stene (July 18). "The raspberry cane-borer is showing up in considerable numbers."
- onnecticut B. H. Walden (July 19). "Damaged canes were observed on July 10 at Hamden, New Haven, and North Branford."
- Y York C. R. Crosby (June 17). "Infested plants were sent in from Utica, Oneida County."

RASPBERRY FRUITWORM (Byturus unicolor Say)

- hington E. J. Newcomer (July 17). "This insect was quite common in a raspberry patch in the Yakima Valley. Up to this time I have not observed this insect in this region."

CURRENT

CURRENT APHID (Myzus ribis L.)

- e York E. V. Shear (July 1). "Currant aphid more abundant than usual and a serious pest in some plantings in Ulster County."
- C. R. Crosby (June 20). "Infested material received from Erie County."

IMPORTED CURRENT SAWFLY (Pteronidea ribesi Scop.)

- onnecticut H. L. Johnson. "This pest seems to be becoming much worse each year at South Meriden where the continued use of Paris green is needed to keep it down."

FOUR-LINED PLANT-BUG (Poecilocapsus lineatus Fab.)

- asachusetts H. T. Fernald. "There is no evidence as yet of an outbreak of the four-lined ~~leaf~~ bug."
- e York C. R. Crosby. "Infested material sent in from Lackawanna, Erie County."
- Jersey M. D. Leonard (July 19). "Currant patches with foliage quite badly damaged at Mountain View."

CRANBERRY

BLACKHEAD CRANBERRY "WORM" (Rhopobota naevana Huebn.)

- Wisconsin O. G. Malde (June 25). "The summer-brood larvae are now hatching and an especially severe infestation is under way in the Mather district."



OBLIQUE-BANDED LEAFROLLER (Cacoecia rosaceana Harris)

consin O. G. Malde (June 25). "A severe infestation of this insect was observed in the Berlin District. The pest is also reported as present in Waupaca, Wood, Juneau, and Jackson Counties."

CRANBERRY TIP MAGGOT (Desynneura vaccinii Smith)

consin O. G. Malde (June 25). "This insect is quite generally distributed throughout the cranberry regions of Wisconsin. Adult flies emerged from June 15 to the 20th."

PECAN

PECAN-NUT CASE-BEARER (Acrobasis hebescella Hulst)

orgia O. I. Snapp. "Pecan-nut case-bearer is reported by several pecan growers in south Georgia to be very abundant this year with severe injury already showing up on small nuts."

isiana T. H. Jones (July 14). "Injured nuts were sent in by a correspondent from Keatchie."

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

issippi R. W. Harned (July 18). "The pecan shuckworm has been reported as causing damage to pecans at Pascagoula."

GRAPE

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

achusetts H. T. Fernald (July 18). "By this date rose-chafers had entirely disappeared in the vicinity of Amherst."

York C. R. Crosby and assistants. "The rose-chaffer has been reported as quite destructive in Monroe, Orleans, Onondaga, and Putnam Counties. In Monroe County the damage seemed to be much more serious on sandy soils."

ew Jersey R. Huizing (June 7). "This insect was doing damage to roses and fruits at Atlantic Highlands."

Wet rginia L. M. Peairs (June 25). "This insect was not as serious as in some former years though present in considerable numbers about Morgantown."

orth roina Franklin Sherman (July 11). "The rose-chaffer has been abundant and destructive to apple, grape, and roses in certain mountain localities in June."

io H. A. Gossard (July 21). "The rose beetle came in for its usual share of notice."

GRAPE LEAFHOPPER (Erythroneura comes Say)

- York E. P. Felt (July 21). "The grape leafhopper appeared to be somewhat abundant in portions of the Chautauqua grape belt and in parts of the Hudson Valley. On June 30 considerable numbers of wingless hoppers were observed in northern Columbia County."
- C. R. Crosby and assistants (June 24). "Infestation in Ulster County does not seem to be very heavy this year. The first eggs were observed in Chautauqua County hatching on June 17."
- L. F. Strickland (June 10). "Adult leafhoppers are unusually numerous in Niagara County vineyards. Infestation is as heavy as that which produced the outbreak in 1916."

ACHEMON SPHINX (Pholus achemon Drury)

- California A. J. Flebut (July 18). "This insect is far more abundant than usual in Madera County. First brood was partially controlled by spraying and the second brood is just hatching."

WHITE-LINED SPHINX (Celerio lineata Fab.)

- California A. J. Flebut. "Several instances were noted where full grown caterpillars had left drying up grass field and attacked vineyards. Practically all outbreaks were in new vineyard sections in the San Joaquin Valley. Hand picking seems to be the only satisfactory control."

ALFALFA CATERPILLAR (Eurymus eurytheme Boisd.)

- California A. J. Flebut. "These insects are leaving cut alfalfa fields and causing some damage in near-by vineyards in the San Joaquin Valley."

YELLOW-STRIPED TARNETWORM (Prodenia podnithogalli var. praeifica Grote)

- California A. J. Flebut. "This is a pest throughout the San Joaquin Valley, leaving alfalfa, upon which it is generally feeding when cut, and entering near-by vineyards. Ditches are generally successful in checking inroads. Damage is slight except in case of young vines."

GRAPEBERRY WORM (Polychrosis viteana Clem.)

- hi H. A. Gossard (July 21). "I judge from material sent in that the grapeberry worm is more numerous in the grape districts near Cleveland than it has been for several seasons."

FALSE CHINCH BUG (Nysius angustatus Uhler)

- California A. J. Flebut. "This insect has been reported from several new sections in Tulare County. No control has been found that was successful."



GRAPEVINE TOMATO GALL (Lasionotera vitis O. S.)

Massachusetts H. T. Fernald (July 21). "During late June and early July the grapevine tomato gall appeared in rather unusual abundance, both on cultivated and wild grapes."

GRAPE-CANE GALL-MAKER (Ampelocystus sesostris LeC.)

Nebraska M. H. Swenk (July 15). "Early in July this insect was discovered in a vineyard in Thurston County. This is a new pest for Nebraska."

FIG

CITRUS MEALYBUG (Pseudococcus citri Risso)

Mississippi R. W. Harned (July 18). "This insect has been reported on figs, coleus, and other plants in various parts of the State. Where the Argentine ants are present the mealybugs are almost certain to be a serious pest to fig and other plants."

Louisiana T. H. Jones (July 15). "As is usual at this season of the year, complaints are being made concerning the abundance of this mealybug on fig. This is usually due to the fact that the pest reaches its maximum abundance at this season. During July reports have been received from New Orleans, Hammond, Addis, and Baton Rouge."

ORANGE

CITRUS THRIPS (Scirtothrips citri Moulton)

California A. J. Flebut. "The citrus thrips is abundant and doing much damage to citrus in Tulare County. Also received several reports of injury to vineyards and other deciduous fruits, particularly plum and apricot."



TRUCK CROP INSECTS

POTATOES AND TOMATOES

.. COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- Massachusetts H.T.Fernald (July 19). "The Colorado potato beetle and the three-lined potato beetle are about normally abundant."
- Connecticut W.E.Britton. "County agents of New London and New Haven Counties report that the Colorado potato beetle has not been as prevalent this year as usual."
- New Jersey M.D.Leonard (July 19). "This insect is generally scarce throughout Bergen and Passaic Counties, although in isolated patches it is doing considerable damage."
- Oswego F.A.Fenton (July 15). "The Colorado potato beetle was very destructive during the past month, doing more damage than it has in the past four years."
- Wisconsin S.B.Fracker (June 26). "This insect is unusually numerous in the northern commercial potato sections."

.. POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- New York C.R.Crosby and assistants. "During the latter half of June flea-beetles were very numerous and destructive in Monroe, Genesee, and Orleans Counties, doing more damage than usual."
- New Jersey M.D.Leonard (July 19). "Serious injury to foliage in several patches, even where spraying was carried on, near Pompton."
- Delaware C.O.Houghton (July 15). "This insect is about normally abundant about Newark."
- Wisconsin S.B.Fracker (June 26). "This insect is about normally abundant throughout the State."
- North Dakota R.L.Webster (June 26). "Injury to foliage by the beetles at this time in Fargo and Cass County."

.. POTATO APHID (Macrosiphum solanifolii Ashm.)

- Massachusetts H.T.Fernald (July 19). "The potato aphid has not yet appeared except a few scattered individuals. There is no evidence as yet of any outbreak."
- New York H.C.Odell (June 17). "The potato aphid was quite effectively checked by the violent wind and rain of June 11. In Nassau County they are multiplying rapidly at present. (July 1) Infestation of the potato aphid is again becoming more prevalent."

OF GREAT BRITAIN, AND OF THE UNITED KINGDOMS OF GREAT BRITAIN AND IRELAND.

BY JOHN HUME, ESQ. OF THE BARR, ADVOCATE GENERAL.

IN TWO VOLUMES. THE FIRST OF WHICH IS NOW IN THE PRESS.

LONDON: Printed by J. H. and J. W. at the Sign of the Crown, in St. Pauls Church-Yard, 1719.

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- Jersey M.D.Leonard (July 19). "Fairly common on potatoes, rather scarce on tomatoes, no appreciable damage. Ladybirds are unusually abundant about Pompton."
- Illinois C.C.Compton (July 15). "Potatoes in Cook and Kane Counties generally infested, and at this writing the potato aphid is becoming numerous enough to cause serious damage."

POTATO LEAFHOPPER (Empoasca mali LeB.)

- Massachusetts H.T.Fernald (July 19). "There is no evidence as yet of any outbreak of the potato leafhopper."
- Jersey M.D.Leonard (July 19). "Hopperburn is severe about Pompton in several large patches of unsprayed potatoes. Nymphs and adults are common, other fields in the vicinity more or less affected."
- Pennsylvania S.W.Frost (July 19). "The injury by this species on potatoes is beginning to become apparent and leafhoppers are present in large numbers!"
- Virginia W.E.Rumsey (July 15). "Leafhoppers are abundant on potato vines at Morgantown and doing considerable damage."
- W.F.A.Fenton (July 15). "The potato leafhopper is abundant and destructive, although it is not doing as much damage as it occasioned in 1921. Recent rains during the last week have destroyed practically all of the nymphal stages, with a result that early potatoes, even when unsprayed, are still standing up, although showing considerable hopperburn. The first spray was put on in the northern part of the State during the last week in June, the second spray in the southern part of the State during the first week in July, and in the central part of the State the second week in July."
- Minnesota A.G.Ruggles (July 19). "The potato leafhoppers are fairly abundant, but only in a few cases have they done as much damage as last year."
- Wisconsin S.B.Fracker (June 26). "Adults appeared on potatoes before June 20; nymphs are now common."

THREE-LINED POTATO BEETLE (Lema trilineata Oliv.)

- Massachusetts H.T.Fernald (July 19). "The three-lined potato beetle is about normally abundant."
- New York E.G.Palmer (June 17). "This insect has been found in large numbers in several fields in Chautauqua County."
- New Jersey M.D.Leonard (July 19). "Adults occasionally observed at Pompton and Mountain View."



BLISTER BEETLES (Meloidae)

- York H.C.Odell (July 1). "Say's blister beetle, Pomphopoea sayi Lec., has appeared in large numbers in three fields in Nassau County."
- Connecticut W.E.Britton (July 24). "Epicauta marginata Fab. is causing some injury in one field near New Haven."
- Indiana J.J.Davis (July 20). "Blister beetles (Epicauta vittata Fab. and E. marginata Fab.) are doing much damage to potatoes, tomatoes, zinnias and dahlias in southern Indiana. I believe no reports have been received north of Columbus, Ind."
- Nebraska M.H.Swenk (July 15). "During the last week in June several reports of injury to potato fields by a striped blister beetle, Epicauta lemniscata Fab., were received."
- Indiana A.L.Strand (July 8). "Blister beetles, especially Epicauta maculata Say, are causing injury to alfalfa, potatoes, and garden truck over a large part of the State."
- Mississippi R.W.Harned (July 18). "Blister beetles have been reported as appearing in large numbers at several places."

ONION THRIPS (Thrips tabaci L.)

- Washington E.J.Newcomer (July 10). "This insect is attacking a considerable area of potatoes in the Yakima Valley, and some growers are spraying for it, something they have never done before."

BOLLWORM (Heliothis obsoleta Fab.)

- Indiana J.J.Davis (July 20). "The tomato fruitworm has been generally abundant and destructive the past month."

CABBAGE

IMPORTED CABBAGE WORM (Pontia rapae L.)

- Nebraska M.H.Swenk (July 15). "The usual number of complaints of injury by this pest was received during the period covered by this report (June 15-July 15)."
- Mississippi R.W.Harned (July 8). "On this date larvae were seen in a garden patch of collards at A & M. College."

CABBAGE MAGCOT (Hylemyia brassicae Bouche)

- Connecticut H.L.Johnson. "This pest seems to be holding its own and bids fair to grow worse with each year."

York P.J.Parrott (June 17). "The cabbage maggot is abundant in seed beds, but owing to frequent rains the plants are making good growth, showing little evidence of injury about Geneva."

E.P.Felt (July 21). "Cauliflower plants severely injured by this pest were received late in June from Clinton County."

C.R.Crosby and assistants report that injury by this pest is less serious than usual in Onondaga and Monroe Counties."

CABBAGE APHID (Brevicoryne brassicae L.)

York H.C.Odell (July 1). "This insect is showing up in serious numbers in Nassau County."

Fred D.Butcher (July 20). "At Muscatine the cabbage aphid was found attacking about 400 acres of cabbage on June 24. These plants had been shipped from the south about the middle of April and the growers noticed lice on them at that time. However, no damage was evident until about June 20."

HARLEQUIN BUG (Murgantia histrionica Hahn)

Mississippi R.W.Harned (July 10). "Infestation heavy about A. & M. College, average of 20 adults and nymphs to each collard plant."

CABBAGE LOOPER (Autographa brassicae Riley)

Mississippi R.W.Harned (July 8). "Infestation heavy at A & M. College, 36 larvae to a full grown collard plant."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Franklin Sherman (July 11). "The Mexican bean beetle has been sent to us from two mountain localities representing a slight extension of the territory already found to be infested, one in Cherokee County and the other in Clay County."

Mississippi R.W.Harned (July 18). "So far the Mexican bean beetle has not been found in Mississippi."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Mississippi R.W.Harned (July 10). "This insect is rather abundant on beans at A. & M. College, average of 2 beetles to every full grown plant."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana T.H.Jones (July 15). "Complaints received from correspondents in Caddo and Vermillion Parishes especially regarding injury to lima beans, though injury to other beans, okra, and Irish potatoes was mentioned."

GREEN SOLDIER BUG (Nezara hiliaris Fitch)

orgia O.I.Snapp (July 18). "This soldier bug is more abundant about Fort Valley than it has been for a number of years. Lima beans in many gardens have been almost totally destroyed by the 'stings' in the developing pods."

WHEAT WIREWORM (Agriotes rufus Say)

York C.R.Crosby (June 20). "Seven acres of beans in Schuyler County very badly infested by this wireworm. This field was planted to wheat and plowed under this spring. Last year it was in beans following a clover sod."

WESTERN 12-SPOTTED CUCUMBER BEETLE (Diabrotica soror Lec.)

gon A.L.Lovett (July 18). "Serious injury occurs to many crops. Beans, potatoes, and the silk of sweet corn have proven favorite foods. Damage exceptionally serious in Lane County."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

achusetts H.T.Fernald (July 19). "The overwintering adults of the striped cucumber beetle have been disappearing from fields since about the 15th."

York M.C.Hammond (June 29). "The larvae of the striped cucumber beetle are causing more damage than was observed last year in Summit County."

es, L.M.Peairs (July 6). "This insect is probably less numerous than at this time last year in this State."

ow F.D.Butcher (July 20). "On June 23, I found the striped cucumber beetle destroying the first planting of pumpkin and squash at Atlantic."

onsin S.B.Tracker (June 25). "More complaints than usual from southern two-thirds of the State."

aska M.E.Swenk (July 15). "Usual number of complaints of injury by this pest received during the past month."

SQUASH

SQUASH BUG (Anasa tristis DeG.)

achusetts H.T.Fernald (July 19). "The squash bug is in normal abundance. Eggs are hatching and a few nymphs developed to the third instar may now be found."

wa Fred D. Butcher (July 20). "The squash bug was ovipositing at this time."

- Nebraska M.H. Swenk (July 15). "The usual number of complaints of injury by this pest were received during the past month."
- Oregon A.L. Lovett (July 12). "Serious injury from July 5 in southern Oregon and at The Dalles."

ONION

ONION THRIPS (Thrips tabaci Lind.)

- Massachusetts H.T. Fernald (July 21). "The onion thrips, which is frequently very abundant by this time, has not been observed up until the past week and even now is not doing any amount of appreciable damage."
- Mississippi R.W. Harned (July 10). "A small patch of onions at A & M. College heavily infested."

SPOTTED CUTWORM (Agrotis c-nigrum L.)

- Massachusetts H.T. Fernald (July 21). "On July 19, this insect was found attacking onions in Sunderland district in the Connecticut Valley, the larvae cutting the half grown to nearly full grown plants nearly to the bulb. The field infested was directly west of a heavy clover sod which had just been cut. It seems evident that the cutworms migrated from this clover field. In two days they had worked into the field 14 rows. In another case where recently cut clover was near by, they had migrated to corn and onions. It was not uncommon to find from 2 to 3 well grown larvae in a single onion leaf."

SUGAR BEET

SUGAR-BEET WEBWORM (Loxostere sticticalis L.)

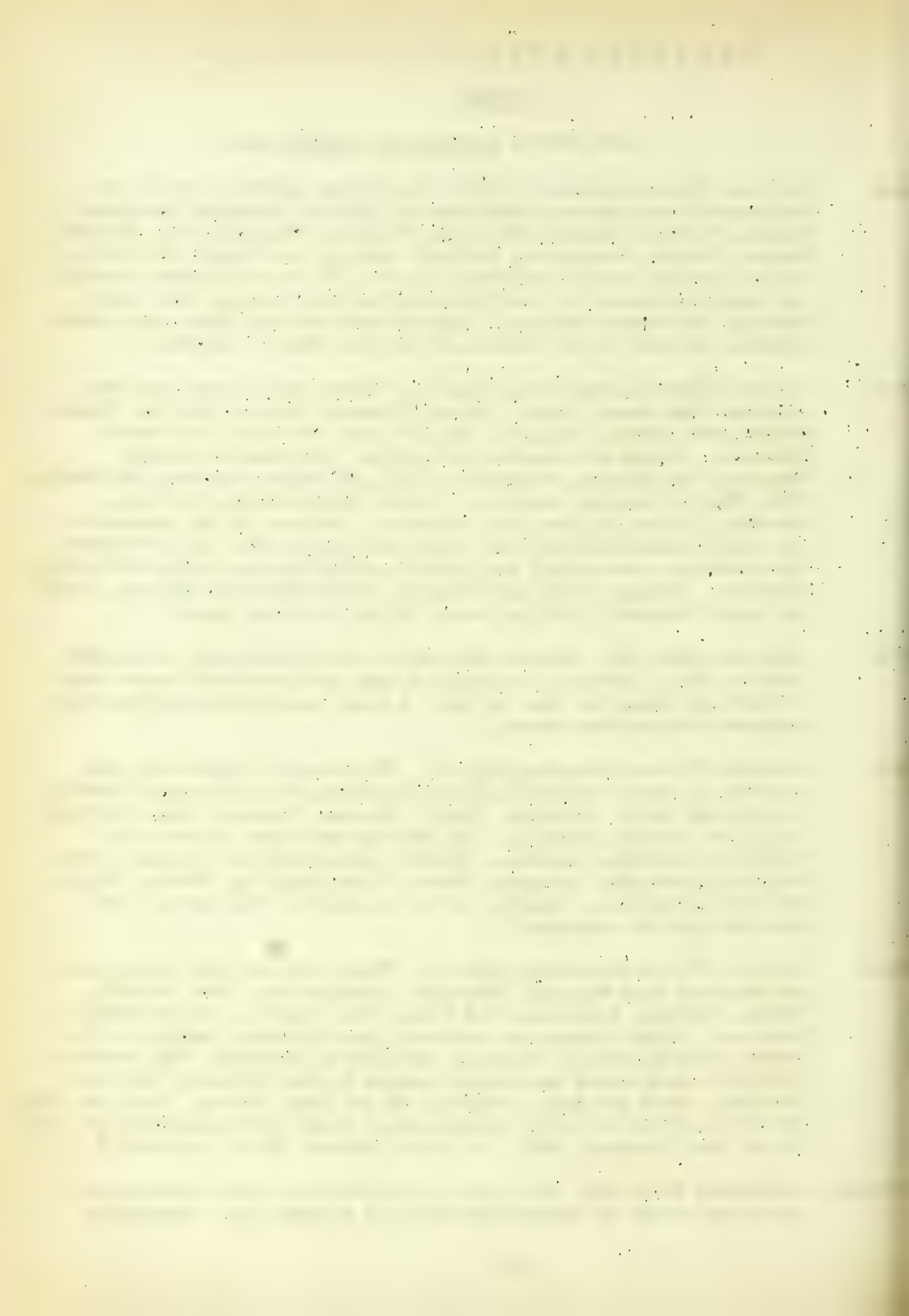
- Montana A.L. Strand. "Preparations are under way to induce all growers in the Yellowstone Valley to combat a heavy infestation of the sugar-beet webworm."

SOUTHERN FIELD CROP INSECTS

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

- Alabama** B.R.Coad (Delta Laboratory, July 20). "Heavy infestations of the boll weevil are reported from Jackson, DeKalb, Cherokee, Lawrence, Morgan, Fayette, Walker, Jefferson, Pickens, Randolph, Lee, Choctaw, Monroe, Butler, Montgomery, Bullock, Barbour, and Geneva Counties. Moderate infestation is reported from St. Clair and Colbert Counties and slight infestation from Franklin, Marion, Madison, Talladega, Marengo, and Macon Counties. Reports were received from thirty-four counties on boll weevil conditions between June 15 and July 15."
- Kansas** B.R.Coad (Delta Laboratory, July 20). "Heavy infestation has been reported from Grant, Desha, Howard, Pulaski, Chicot, Prairie, White, Nevada, Hot Spring, Poinsett, Pike, Clarke, Faulkner, and Sharp Counties. Slight infestation is reported from Lonoke, Ashley, Woodruff, Mississippi, Montgomery, Yell, Cleburne, Jackson, St. Francis, Polk, Perry, Lincoln, Randolph, Monroe, Independence, Phillips, Arkansas, Dallas, Miller, and Lafayette. Reports of the presence of the weevil were received from forty counties in this State." Bureau field workers ascertained the percentage infestation in the following counties: Ashley, 8 per cent; Chicot, 15-75 per cent; Pulaski, 15-30 per cent; Woodruff, 2-15 per cent; Miller, 4-15 per cent."
- Idaho** B.R.Coad (June 15). "Reports indicate a more widespread infestation than in 1921. Numbers of weevils in most sections much larger than in previous years for this period. A heavy scattered infestation is reported from Madison County."
- Georgia** B.R.Coad (Delta Laboratory, July 20). "Boll weevil infestation was reported as heavy in Morgan, Troup, Franklin, Floyd, Jasper, Harris, Washington, Early, Columbia, Carroll, Chatham, Laurens, Clay, Terrell, Crisp, and Houston Counties. The weevils were also numerous in McDuffie and Newton Counties. Slight infestation was reported from Colquitt, Randolph, Muscogee, Thomas, Bibb, Spalding, Coweta, Marion, and Monroe Counties. Reports of the presence of the weevil were reported from 34 counties."
- Louisiana** B.R.Coad (Delta Laboratory, July 20). "Heavy boll weevil infestation was reported from Webster, Bienville, Natchitoches, East Carroll, Tensas, Rapides, Avoyelles, Red River, West Carroll, and Morehouse Counties. Slight damage was reported from Richland, Lafayette, St. Landry, East Feliciana, Ouachita, and DeSoto Counties. The Bureau's field men ascertained percentage damaged in the following counties: Richland, 15-30 per cent; Ouachita, 25 per cent; DeSoto, 10-20 per cent; Red River, 10-40 per cent; Natchitoches, 15-30 per cent; Avoyelles, 20-48 per cent; Rapides, 15-50 per cent; Bossier, 45-100 per cent."
- Mississippi** R.W.Harned (July 18). "As a whole, weevils are not as abundant now as we had reason to expect they would be a month ago. Apparently



they are more abundant in the hill sections of the State than in the Delta but even in the hills many fields can be found with less than 10 per cent infestation. More planters are poisoning against the boll weevil than ever before."

B.R.Coad (Delta Laboratory, July 20). "Heavy weevil infestation was reported from the following counties: Holmes, Tallahatchie, Marshall, Tate, Monroe, Atalla, Coahoma, Montgomery, Jefferson, Jeff Davis, Pike, Lawrence, Calhoun, Sunflower, Benton, Noxubee, Prentiss, Claiborne, Union, Bolivar, Sharkey, Tippah, Webster, Lincoln, Franklin, Oktibbeha, Tishomingo, Alcorn, Winston, Grenada, Warren, Washington and Quitman. The heavy infestations were checked by weather conditions in several of these counties. Slight infestations were reported from Panola, Carroll, Pontotoc, Lafayette, Jasper, Chickasaw, Walthall, Leake, Hinds, Clay, Jones, Humphreys, Carroll, DeSoto, Tunica, Lee, Neshoba, Lauderdale, Wayne, Simpson, and Yalobusha Counties. Reports were received from 58 counties in this State."

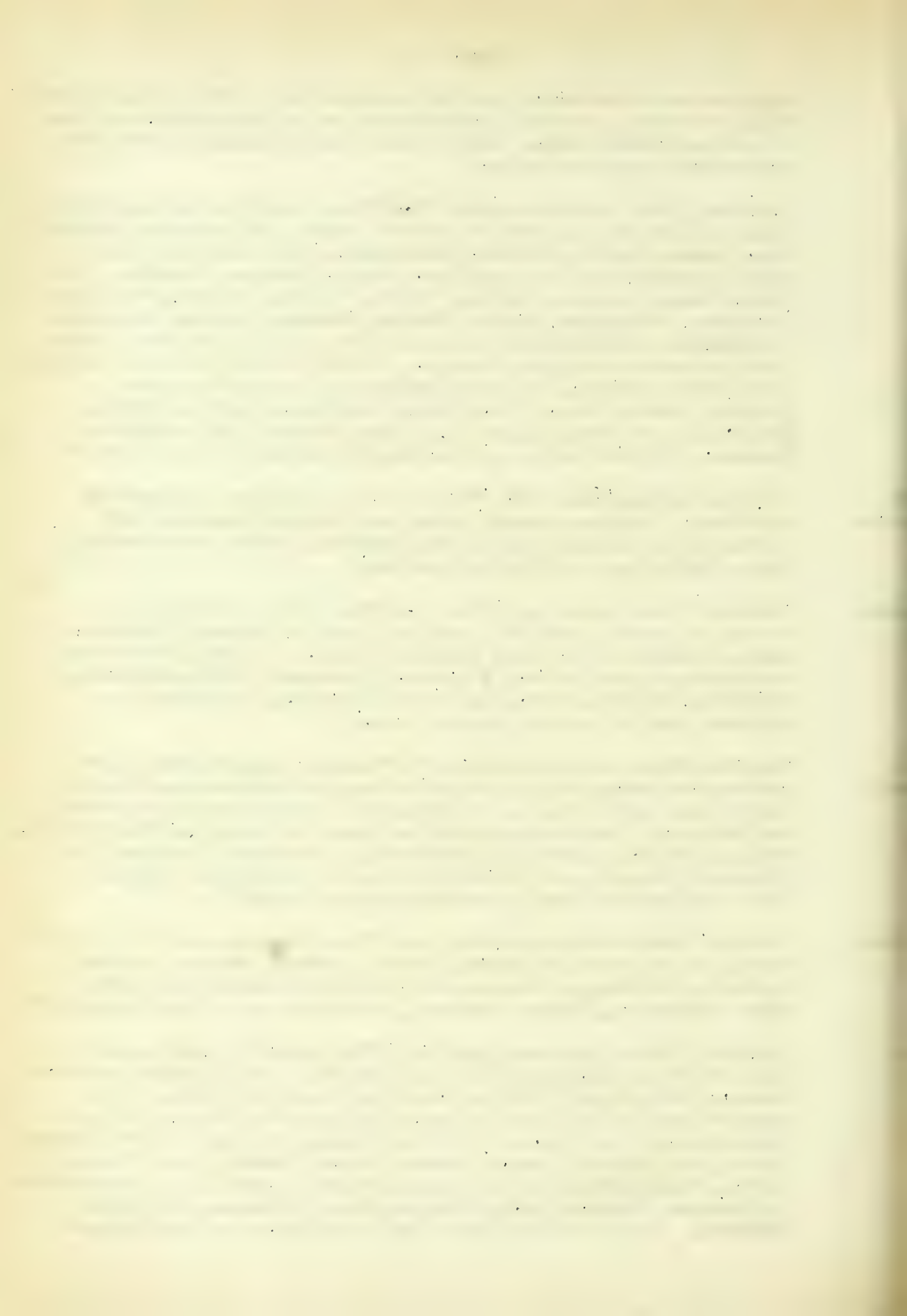
Franklin Sherman (June 23). "The weevil is reported as plentiful in Robeson, Columbus, Anson, Union, and Scotland Counties with occasional specimens reported from Richmond, Bladen, Mecklenburg, Moore, Cumberland, and Onslow Counties."

B.R.Coad (Delta Laboratory, July 20). "Heavy infestation of the weevil is reported from Pittsburg and parts of Haskell, Pontotoc, Atoka, Okfuskee, Bryan, and Lincoln Counties. Slight infestations are reported from Leflore, Jefferson, Cleveland, Caddo, Comanche, McCurtain, Choctaw, Logan, and McLain Counties. The weevil is reported from 24 counties in this State."

B.R.Coad (Delta Laboratory, July 20). "Shows a comparatively light infestation during this period while reports indicate considerable increase in infestation in the prospect of new generation of weevils now hatching. They were reported as plentiful in Aiken, Chesterfield, Chester, Sumter, Abbeville, Spartanburg, Lancaster, Clarendon, and Orangeburg Counties and slight in Anderson and Newberry Counties. They were reported from 14 counties in this State."

B.R.Coad (Delta Laboratory, July 20). "Heavy infestations of the boll weevil are reported in Decatur, Hardin, McNairy, Fayette, Shelby, Hardeman, and Chester Counties and light infestations in Tipton, Giles, Henderson, Haywood, Madison, Lauderdale and McMinn Counties."

B.R.Coad (Delta Laboratory, July 20). "The Bureau's field workers have determined the percentage infestation in the following counties: Cameron, 92 per cent; Hidalgo, 94-95 per cent; Jim Wells, 51 per cent; Nueces, 47 per cent; Brazoria, 40 per cent; Liberty, 39 per cent; Jasper, 6 per cent. Heavy infestations are also reported from Ellis, Hays, Coryell, Gregg, Fannin, Denton, Parker, Wise, Cooke, Sabine, Wilson, Cherokee, and Grayson Counties and slight infestations in Montagne, Hopkins, Bell, Eastland, Cass, McLennan, and Collin Counties. Weevils were reported from 43 counties in this State."



COTTON WORM (Alabama argillacea Hubn.)

B.R.Coad (Telegram August 1). "Cotton leaf-worm reported very generally during the past few days, over Texas, Louisiana, and Mississippi, and becoming abundant around Tallulah, La. Apparently very widespread infestation developing."

COTTON RED SPIDER (Tetranychus telarius L.)

Mississippi R.W.Harned (July 18). "The cotton red spider is causing some loss in this State."

CORN-SILK BEETLE (Luperodes varicornis LeC.)

Franklin Sherman (July 11). "This beetle was reported once during the month destroying the blossoms of cotton. This is the first report in several years."

COWPEA CURCULIO (Chalcodermes aeneus Boh.)

Franklin Sherman (July 11). "This beetle has caused numerous complaints since May 18. This pest has been found more prevalent than usual but we are convinced that the damage is not serious."

BOLLWORM (Heliothis obsoleta Fab.)

Franklin Sherman (July 11). "On July 1 an outbreak was reported from Lee County, the insect spreading from oats and vetch into cotton. This sounded very much like the fall armyworm but the specimens were determined as the above at Washington. At about the same time similar outbreaks occurred along the South Carolina line. In this latter locality a cotton dusting machine was used to apply calcium-arsenate with entire satisfaction. The larvae were attacking the foliage in large numbers. Squares have not yet formed."

Mississippi R.W.Harned (July 18). "This insect is attracting about the normal amount of attention as a pest of cotton."

COTTON APHID (Aphis gossypii Glov.)

B.R.Coad (June 15). "Presence of aphids during the week ending May 20, was reported from Alandale, S.C. Gibson, N.C., Waynesboro, Ga., Buena Vista, Ga., and Runge, Tex."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana

T.E.Holloway. "At the suggestion of Dr. Howard, adults of Habrobracon brevicornis, a parasite of the European corn borer from France, were sent to the sugar-cane insect laboratory at New Orleans for use against the sugar-cane moth borer. They attacked larvae of the moth borer readily and were bred successfully under laboratory conditions. Several hundred of the parasites have been released on a plantation near Lake Charles."

TOBACCO

WEBWORMS (Crambus caliginosellus Clem. and
Acrolophus texanella Clem)

Tennessee

A.C.Morgan. "The most serious infestation of tobacco crambids in the history of Tennessee occurred this year and culminated in June. This was also the worst year on record for hornworm injury to tobacco in this State."

FOREST AND SHADE - TREE INSECTS

GENERAL FEEDERS

PERIODICAL CICADA (Tibicen septendecim L.)

Brood XIII

- est
ginia W. E. Rumsey (June). "The periodical cicada was reported from the following places in West Virginia: Lincoln County (Bernie, Bulger, Minerva, Myra, Priestley, Sand Creek, Sheridan), Logan County (Pecks Mills), Mason County (Grimes Landing), Monongalia County (Morgantown), Putnam County (Bee, Midway, Scott, Depot, Scary, and Waldo)."
- diana J. J. Davis. "The periodical cicada has appeared in the following places in the northwestern corner of Indiana: Hammond, Cedar Lake, Lowell, between Westville and Morris, and Wanatah. Considerable damage has been done to forest and orchard trees. Apple and other fruit trees suffered most. All of the reports so far have come from the three lake counties."
- inois (Bureau's Correspondence). "During late June correspondence indicated the presence of the periodical cicada at Joliet and Roselle."
- (Bureau's Correspondence June 15). These insects have been reported very numerous in the timber about Dyersville.
- onsin (Waterford Post, June). "One day last week, according to a report, the sky over Lake Geneva was clouded with these insects and the woods are resounding with their wailings."
- S. B. Fracker (June 26). "This insect is common throughout the southern part of the State north to Sauk County. Definite records have come in from Grant, Walworth, and Sauk Counties."

Brood XXI

- ida Jeff Chaffin (July 29). "Reports from inspectors and county agents indicate that the XXI brood of the periodical cicada is present all over North and West Florida at the present time. I have received specimens from as far west as Bay County, Panama City, and collected a few specimens here at Gainesville yesterday. The brood seems less numerous than usual and just appeared within the last ten days or two weeks."

FALL WEBWORM (Hyphantria cunea Drury)

- achusetts H. T. Fernald (July 14). "First tents of the fall webworm were seen at Amherst today. These contain larvae from 3 to 4 days old."
- Fred D. Butcher (July 20). "Webworms were very common on boxelder and ash trees in Cass and Montgomery Counties."

- Nebraska M. H. Swenk (July 15). "The whole of eastern Nebraska is again threatened with a scourge of the fall webworm on shade trees similar to the one experienced last year, as the first brood of this pest was very plentiful and defoliated trees extensively in some places."
- Mississippi R. W. Harned (July 16). "The fall webworm is more abundant and more serious than we have ever known it to be at this time of the year. Thousands of small trees in all parts of the State have been completely defoliated. Rather large trees are to be seen with several dozen webs on them. So far only the first generation has appeared, but the worms are probably more abundant than they usually are during the second generation. If natural enemies do not help this year, we can expect very serious losses from this pest when the second generation appears in August and September. Their favorite food plants seem to be in the following order: persimmon, pecan, hickory, walnut, sycamore, black gum, sweet gum, and elm."

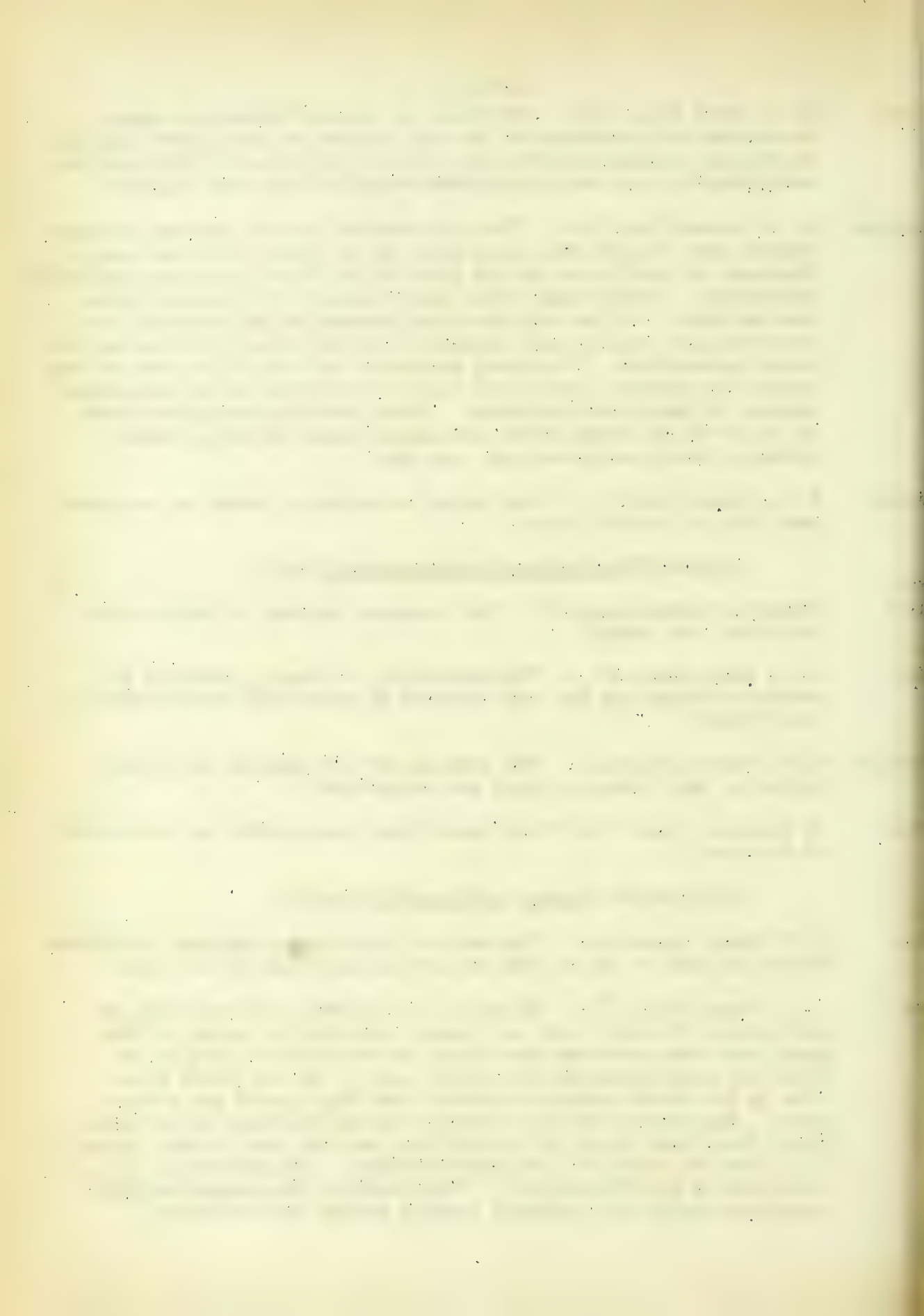
Louisiana T. H. Jones (July 7). "Webs noted to be rather common in woodlands near Olla in LaSalle Parish."

BAGWORM (Thyridonteryx ephemeraeformis Haw.)

- North Carolina Franklin Sherman (July 9). "The evergreen bagworm is causing more inquiries than usual."
- Indiana J. J. Davis (July 20). "The bagworm is, as usual, prevalent in southern Indiana and has been reported as especially destructive to arborvitae."
- Mississippi R. W. Harned (July 18). "The bagworm is very abundant at several places in this State on cedars and arborvitae."
- Alabama T. H. Jones (June 17). "This insect has been reported as destructive at Bogalusa."

ELM SPANWORM (Ennomos subsignarius Huebn.)

- Arkansas G. E. Smith (June 24). "The moths of this insect appeared in Orleans County on June 18 and 19, but are not as plentiful as last year."
- Alabama J. J. Davis (July 20). "Recently two reports, with specimens, of defoliation of shade trees and timber trees by the larvae of this pest, have been received from Albion in the northern part of the State and from Lizton in the central part. In the latter place this is the third consecutive season that this insect has been a pest. This insect was also observed in the woodlands along White River from Broad Ripple to Noblesville, and has been recorded along Fall Creek as far as Ft. Benjamin Harrison. Specimens have also been sent in from Winchester. There seems to be a heavy tachinid parasitism which will probably largely control this outbreak."



SPRING CANKERWORM (Paleacrita vernata Peck)

T. C. Murray (June 17). "Forest trees were severely defoliated in the vicinity of Cedar Pond in Rockland County."

BOXELDER

BOXELDER TWIG BORER (Proteopteryx willingana Kearf.)

R. L. Webster (June 29). "A number of reports have come in of this twig-borer, mostly from the central portions of the State."

CECROPIA MOTH (Samia cecropia L.)

R. L. Webster (June 29). "Moths were sent in by several correspondents. The larvae of this insect frequently strip boxelders and foliage during the season."

CATALPA

CATALPA SPHINX (Ceratomia catalpae Boisd.)

H. A. Gossard (July 21). "The catalpa sphinx was again quite numerous in June in some catalpa groves in Miami County."

R. W. Harned (July 18). "Apparently two distinct generations of the catalpa sphinx have already been observed at Starkville."

CATALPA MIDGE (Cecidomyia catalpae Comst.)

H. A. Gossard (July 21). "In late June and early July we had several reports of the catalpa midge."

ELM

ELM LEAF-BEETLE (Galerucella luteola Muell.)

H. T. Fernald (July 21). "Late in June the elm leaf-beetle was reported to be present in large numbers in sections of Westfield and Longmeadow. These reports can not be considered conclusive, as the pest can not be found at Amherst."

E. P. Felt (July 21). "This insect was reported as having badly skeletonized elms at Waterford, Saratoga County, and also noted at Loudonville and about Albany. In Rochester Mr. R.E. Horsey reports that badly infested trees have been noted in the old area, and a new one infested in the eastern portion of the City."

C. R. Crosby (July 4). "Specimens of damage done by this pest were sent in from Auburn, Cayuga County."

Richard Huizing (July 7). "This insect is damaging elms at Princeton."

L. M. Peairs (July 6). "This insect is very abundant on a few trees in Martinsburg. It is not usually injurious in this State."



WOOLLY ELM APHID (Eriosoma americanum Riley)

- iana J. J. Davis (July 20). "The elm leaf-curl continues to be the subject of frequent inquiries."
- Mississippi R. W. Harned (July 18). "The woolly elm aphid is causing noticeable injury to elms on the Campus of the A. & M. College."

COCKSCOMB ELM-GALL (Colopha ulmicola Fitch)

- York C. R. Crosby and assistants. "This insect is reported as attacking elms in Cayuga, Erie, and Chemung Counties."
- est L. M. Peairs (July 6). "Several cases of injury to elm trees by this insect have been reported. This is unusual as a pest in this State."
- ho H. A. Gossard (July 21). "The cockscomb gall has been sent to us very frequently of late."
- iana J. J. Davis (July 20). "The cockscomb gall continues to be the subject of frequent inquiries."

MAPLE

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

- de Island A. E. Stene (July 18). "Large numbers of inquiries of this insect are coming into the office of the State Board of Agriculture and the College, indicating that the pest is attracting a good deal of attention."
- York E. P. Felt (July 21). "Badly infested material was received early in July from Schenectady."
- Jersey H. B. Weiss and assistants. "During the latter half of June this pest was reported from Maplewood, Mountain Lakes, Madison, Westfield, and Crawford, West Va."
- est L. M. Peairs (July 6). "This insect is apparently doing an unusual amount of damage in several places in this State."
- inia J. J. Davis (July 6). "The cottony maple scale has not yet been checked by its natural enemies. Unless the parasites show up more actively during the latter part of the season this scale will be very abundant next year. Some spraying experiments with lubricating oil emulsion have given from 90 to 100 per cent control."

MAPLE BORER (Glycobius speciosus Say)

- onnecticut W. E. Britton (July 24). "This insect is seemingly more abundant than usual. It has been reported from Ridgefield, Plymouth, Torrington, Hamden, New Haven and South Meriden. Mr. H. L. Johnson reports that the pest has practically killed a double row of large maples in the last named town."



OAK

Heterocampa bilineata Pack.

North Carolina Franklin Sherman (July 21). "Caterpillars reported on July 10 as defoliating oak trees in central North Carolina."

OAK LACE-BUG (Corvthucha arcuata Say)

New Jersey H. B. Weiss (July 6). "This insect is very abundant on oak at Lake Hurst."

PINE

Olene sp.

Wisconsin S. B. Fracker (June 24). "Thousands of acres of pine in Burnett County are heavily infested with a species of Olene, probably Olene manto var. montana Beut. This species caused a very similar outbreak about 1907."

POPLAR

POPLAR LEAF-STEM GALL APHID (Peromphigus populi-transversus Riley)

North Dakota R. L. Webster (July 16). "Reports of this insect on poplar have come in from Divide, Ward, and Cass Counties."

SPRUCE

COTTON RED SPIDER (Tetranychus telarius L.)

Nebraska M. H. Swenk (July 15). "During the last 10 days of June and up to July 5, spruce trees were severely attacked by red spiders in Antelope Valley, Custer, and other counties along the eastern edge of the sand hills, a lesser number of similar reports being received from the more eastern counties."

TULIP

TULIP SCALE (Toumeyella liriodendri Gmel.)

West Virginia L. M. Peairs (July 6). "Three reports of serious damage to tulip trees have been received, from the vicinity of Huntington."



GREENHOUSE AND ORNAMENTAL

PLANT INSECTS

GENERAL FEEDERS

JAPANESE BEETLE (Popillia japonica Newm.)

Jersey Bureau of Entomology Monthly Letter No. 98. "There was received at the Japanese beetle laboratory earlier in the spring what is believed to have been one of the largest shipments of imported parasite material ever brought into this country. Something over 100,000 cocoons of a tachinid known to be parasitic on the Japanese beetle in Japan were sent to the laboratory by the Bureau's representative stationed in Japan. The large proportion of the cocoons were in good condition and emergence has just started."

COTTONY CUSHION SCALE (Icerya purchasi Mask.)

Missiana T. H. Jones (June 30). "County agent at Shreveport reports that several heavy infestations of the cottony cushion scale have been discovered at this place. The insect is spreading rapidly. One small colony of the vedalia beetle has been sent from the experiment station, but these have disappeared and appear to have been lost altogether."

IRIS

Mononychus vulpeculus Fab.

Connecticut H. L. Johnson (June 15). "This insect is doing considerable damage to iris at South Meriden."

IRIS BORER (Macronoctua onusta Grote)

ane C. S. Weigel. "This insect is reported as particularly injurious to iris during the month of July from Orl's Island."

et York C. S. Weigel. "This insect is reported as particularly injurious during the month of July from Ballston Lake."

ho H.A. Gossard (July 21). "During July specimens of this insect were received from Western Reserve University where they were destroying iris plants. This caterpillar bears considerable superficial resemblance to the European corn borer."

ROSE

ROSE LEAF-BEETLE (Nodonota puncticollis Say)

et York E. P. Felt (July 21). "Appears to have been unusually abundant in Columbia County, also reported earlier in the season from Putnam County."

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RHODODENDRON

RHODODENDRON LACE-BUG (Stethorus rhododendri Horv.)

York E. P. Felt (July 21). "Mr. R. E. Horsey reports that this insect is quite numerous in the Rochester Parks."

AZALEA

AZALEA SCALE (Eriococcus azaleae Const.)

Connecticut W. E. Britton (July 24). "Have never observed this insect so numerous as it is this year in New Haven."

DELPHINIUM

CYCLAMEN MITE (Tarsonemus pallidus Banks)

York C. R. Crosby (June 16). "Found severely infested plants of delphinium in Oneida County."

Ohio H. A. Gossard (July 21). "We have had numerous reports of damage by this insect, particularly to delphinium, strawberries, and greenhouse plants."

HAWTHORN

A LACE-BUG, Corythucha cydoniae Fitch

Mississippi R. W. Allen (July 15). "This tinging was very abundant on hawthorn at the Agricultural College. The leaves turned rusty brown and dropped. They are covering an area of approximately 50 acres and several adults can be found on every leaf."

GROUNDSEL TREE (Raccharis halimifolia L.)

A LACE-BUG, Tingis sp.

York E. P. Felt (July 21). "Mr. R. E. Horsey reports a moderate infestation by this pest about the middle of July. The infestation was easily controlled with nicotine soap spray."



INSECTS INFESTING HOUSES AND PREMISES

ANTS (Formicidae)

Mississippi R. W. Harned (July 18). "The fire-ant, Solenopsis geminata Fab. (vars. xyloni and rufa) have been frequently reported from houses in this State. Solenopsis molesta Say has also been reported. The tiny black ant, Monomorium minimum Buckley, has been reported from a number of towns. Monomorium pharaonis L. is next to the Argentine ant, the worst house ant in Mississippi. This is particularly a meat-loving species. Another species that has been reported as visiting households is Tetramorium guineense Fab."

Connecticut W. E. Britton (July 24). "Many more complaints than usual have been received relative to these insects from New Haven."

ARGENTINE ANT (Iridomyrmex humilis Mayr)

Mississippi R. W. Harned (July 18). "This pest has now been reported from over 55 different towns and cities in Mississippi. All of these towns, with the exception of three, are on railroads, indicating that these have been the greatest factor in the distribution of this pest. Aside from getting into food they infest beds, drive poultry from their nests, and act as distributors of scale insects and plant-lice."

A CADDICEFLY (Macronema zebratum Hag.)

Massachusetts H. T. Fernald (July 21). "About the first of July swarms of these caddiceflies were reported from Montague City (near Greenfield) as swarming on the houses, on clothing hung out to dry, and attracted to light, proving a great annoyance to residents in that region. On July 3 I visited this town and found this trichopteran. On that date they were fast disappearing. Curiously enough, more of these insects were found on the black smooth surface of the macadamized road than anywhere else at the time of my visit. Practically none could be found on the shrubbery and few on the sides of houses but they kept appearing from somewhere and alighting on the road and skipping on its surface in a very peculiar fashion. This insect is usually rather rare in this part of Massachusetts."

GRASS MAGGOT (Sciara sciophila Loew)

Pennsylvania S. W. Frost (July 19). "The larvae of this species have been found in large numbers among the grass plants beneath the shade of maple trees at Arendtsville. They are attracting much attention because of their abundance and are more or less of a nuisance."

A SWEAT BEE, Agapostemon virescens Fab.

New York E. P. Felt (July 21). "Specimens of this bee were received early in July from Catskill, in Greene County. They were reported as being so numerous upon lawns as to destroy the sod by their burrowing operations."

MANCHIGGERS (Trombidium spp.)

- ryland J. A. Hyslop (July 25). "Chiggers are much more prevalent than they were last year in southern Montgomery County. The summer has been extremely wet."
- as F. C. Bishopp (July 27). "With the coming of hot, dry weather during the latter part of June and July the unusual abundance of chiggers rapidly decreased."

CATTLESPINOSE EAR TICK (Ornithodoros megnini Duges)

- as F. C. Bishopp (June 26). "The writer and D. C. Parman found the ear tick causing considerable annoyance in Uvalde County during June. Stockmen say it is much more abundant than usual."

SCREW-WORM (Chrysomya macellaria Fab.)

- as F. C. Bishopp (July 27). "After about July 10 screw-worm cases, which had been rather more numerous than normal in southwestern Texas, began to subside materially. On this date Mr. D. C. Parman reports comparatively few cases among cattle in the vicinity of Uvalde. This is undoubtedly associated with the hot, dry weather."

HORNFLY (Haematobia irritans L.)

- as F. C. Bishopp (July 27). "During May and the greater part of June hornflies were a pest of much importance throughout practically all of Texas. About the middle of June they began to decrease materially and there was noted in some sections a tremendous increase in the number of tumblebugs, especially Canthon vigilans. In places these were so numerous as to completely break up the dung within a few hours after it was dropped. These beetles and the hot, dry weather are probably responsible for the falling off in the number of flies."

SHEEPBLACK BLOWFLY (Phormia regina Meig.)

- as F. C. Bishopp (July 27). "This fly has practically disappeared in Texas. It was extremely numerous and caused heavy loss among sheep raisers in the western part of the State during the spring."



SHEEP SCAB (Psoroptes communis Furst.)

ifornia (California Weekly News Letter, Volume 3, No. 29). "On account of the presence of sheep scab in Lassen County, the movement of sheep from this county has been prohibited except where shipment is accompanied by certificate of inspection. This order became effective July 15."

POULTRY

STICKTIGHT FLEA (Echidnophaga gallinaceus Westw.)

York C. R. Crosby (June 10). "This insect was sent in from Frewsburg, Chautauqua County, and determined by Mr. R. C. Shannon."



THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

September 1, 1922

Number 6

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

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OUTSTANDING ENTOMOLOGICAL FEATURES FOR AUGUST, 1922

The Hessian fly situation continues favorable over the greater part of the wheat belt. The preliminary survey in New York State shows a decrease of flaxseeds in stubble from 5.2 per cent last year to 1.2 per cent this year. Over the southern half of Ohio stubble infested with flaxseeds has dropped to 3 per cent. In the northwestern part of the State, however, the infestation runs to 15 per cent. In fields planted after the fly-free date and 86 per cent in early sowings. In Indiana the percentage of flaxseeds is low and parasitism heavy. In Illinois parasitism runs from 60 to 75 per cent with occasional fields showing 100 per cent of the puparia parasitized. In Iowa and North Dakota a large fall emergence is anticipated. A very recent survey in northwestern Kansas shows a decided increase of Hessian fly. In fact much of the territory has never before been infested by this insect. From 5 to 25 per cent of the crop was damaged by fly this year. The outbreak extends from Osborne and Russell Counties to the northwestern corner of the State.

The Mormon cricket is reported as being serious in parts of Colorado, Utah, and Idaho.

The chinch bug situation, as a whole, is not as serious as anticipated earlier in the season.

The first record of the corn-leaf blotch-miner in Maine was received this month.

The velvet bean caterpillar appeared at Gainesville, Fla., about fifteen days earlier than last year. It should have reached the Georgia State line during the last week in August, though no reports to this effect have been received.

The cherry fruit sawfly has been reported for the first time as occurring in southwestern Washington.

The black vine weevil has damaged cranberry plantations in Washington State.

The grape leafhopper is injurious in the Great Lakes grape region of Michigan, New York, and Ohio.

Living Mexican fruit fly, Mediterranean fruit fly, and Papaya fruit fly larvae have been intercepted by quarantine officers at the various ports of entry in California during the past month.

The potato leafhopper is seriously abundant in Ohio and much hopperburn is in evidence. This leafhopper is also reported from Michigan, New York, and the northern half of Indiana.

The worst outbreak of the false chinch bug on potatoes in the history of the State is under way in southern Idaho, according to reports from that State.

The history of the world is a long and varied one, and it is not possible to give a full account of it in a single volume. The history of the world is a story of the human race, and it is a story that has been told in many different ways. The history of the world is a story of the human race, and it is a story that has been told in many different ways.

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The Mexican bean beetle is causing heavy damage in Alabama and Georgia and locally in Tennessee and Kentucky. It has extended its range considerably this year. Twenty-four new counties have been infested in Georgia, Kentucky, Tennessee, North Carolina, and South Carolina.

The boll weevil situation is but little changed from last month. Heavy or increasing infestations are reported from parts of North Carolina, Mississippi, South Carolina, and Georgia. Moderate to light infestations occur in Tennessee, Arkansas, Oklahoma, southern Alabama, and Louisiana, and the greater part of Texas.

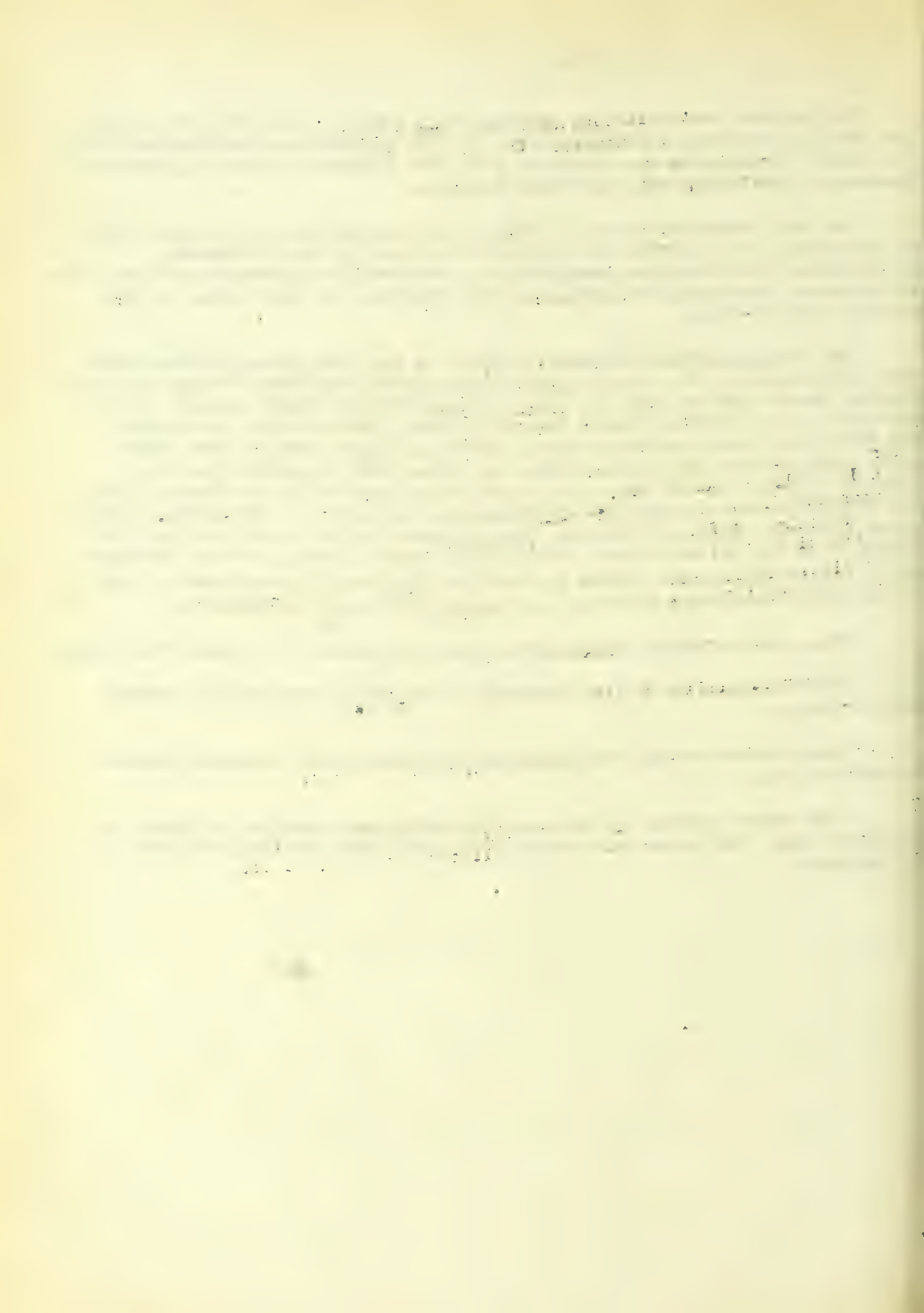
The cotton leafworm outbreak reported in the last number of the Survey developed rapidly. The first larvae were reported from Hines County in south-central Mississippi on July 21. The first-generation flight appears to have extended as far north as Dallas County in Texas, Desha County in Arkansas, and Oktibbeha County in Mississippi. The main flight seems to have taken place prior to the last week in July, as larvae were reported from these counties on July 31. By August 14, moths were found in Garvin County, Okla. and Washington and Mississippi Counties, Ark. Inasmuch as moths of the second generation were found at Tallulah, La., on August 14, it seems that the first flight of moths did not extend farther ^{north} than central Texas, southern Arkansas, and northern Mississippi, while the moths of the second generation had gone as far north as central Oklahoma and northern Arkansas by August 15.

The satin moth has become permanently established in western Washington.

The elm borer is killing hundreds of elm shade trees in the eastern half of Kansas.

An epidemic of the two-lined prominent on oaks is covering central North Carolina.

The worst outbreak of the pine butterfly ever recorded in Idaho is now under way. The larvae have completely defoliated about 14,000 acres of yellow pine.



INSECT PEST SURVEY BULLETIN

Vol.2

September 1, 1922

No.6

CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

New York

C.R.Crosby (preliminary survey for 1922). "Survey was carried on in 14 counties in the western part of the State. The average infestation in the 14 counties was 1.2 per cent as compared with an infestation at this time last year of 5.2 per cent. The county infestations were as follows:

Per cent	Per cent	Per cent
"Niagara - - -4.4	Monroe - - - 0.0	Cayuga - - -0.0
Erie - - -6.5	Livingston - .0	Onondaga - - .0
Orleans - - - .5	Wayne - - - -3.3	Oswego - - - .0
Genesee - - - .8	Ontario - - - .5	Tompkins - - .8"
Wyoming - - - .4	Seneca - - - .0	

Ohio

T.H.Parks (August 1). "The Hessian fly is well under control in all except the northern counties. The southern half of the State has an average of only 3 per cent of the straws infested. Early sown fields, wherever they were present, retained most of their flies. The average percentage of straws infested in 15 early sown fields in 10 northwestern Ohio counties was 86 per cent. The average percentage of straws infested in 72 fields sown after the fly-free date in the same counties was 18 per cent."

Indiana

J.J.Davis (August 17). "Although there is comparatively small infestation of the Hessian fly and regardless of the fact that a large percentage of the flaxseeds are parasitized, we will continue to strongly urge the sowing of the wheat after the fly-free date. We feel that this step is essential for satisfactory and continual control."

Illinois

W.P.Flint (August 17). "There is a general moderate to heavy infestation in wheat stubble in the northern part of the State, with much lighter infestation in central and southern Illinois. Percentage of parasitism apparently very high, averaging from 60 to 75 per cent with occasional fields running practically 100 per cent."

Iowa

F.A.Fenton (August 18). "The Hessian fly is very abundant and all signs point to a very large fall emergence and subsequent wheat infestation. Parasitism of this species, which for the past few years has been negligible, is on the increase."

North Dakota R.L.Webster (August 15). "The more abundant rainfall this year may have increased the second brood to large enough proportions to become troublesome. Reports of this pest are received from McKenzie and Williams Counties in the northwestern part of the State. This insect is not common in the spring wheat region."

Kansas J.W.McColloch (August 26). "A very recent survey in northwestern Kansas shows a decided increase of Hessian fly. In fact much of the territory has never before been infested by this insect. From 5 to 25 per cent of the crop was damaged by fly this year. The outbreak extends from Osborne and Russell Counties to the northwestern corner of the State."

EUROPEAN WHEAT SAWFLY (Cephus pygmaeus L.)

New York C.R.Crosby. "In connection with the Hessian fly survey, the percentage infestation of this pest was determined as follows:

"Niagara - - -6.8	Livingston - - -19.3	Tompkins - -17.6
Erie - - - -2.6	Monroe - - - -3.0	Cayuga - -24.5
Orleans - -13.3	Wayne - - - -7.6	Onondaga - -17.6
Genesee - -23.8	Ontario - - - -31.4	Oswego - -6.0
Wyoming - -19.2	Seneca - - - -10.8	

"This gives a 14.3 per cent infestation for the 14 counties where counts were made."

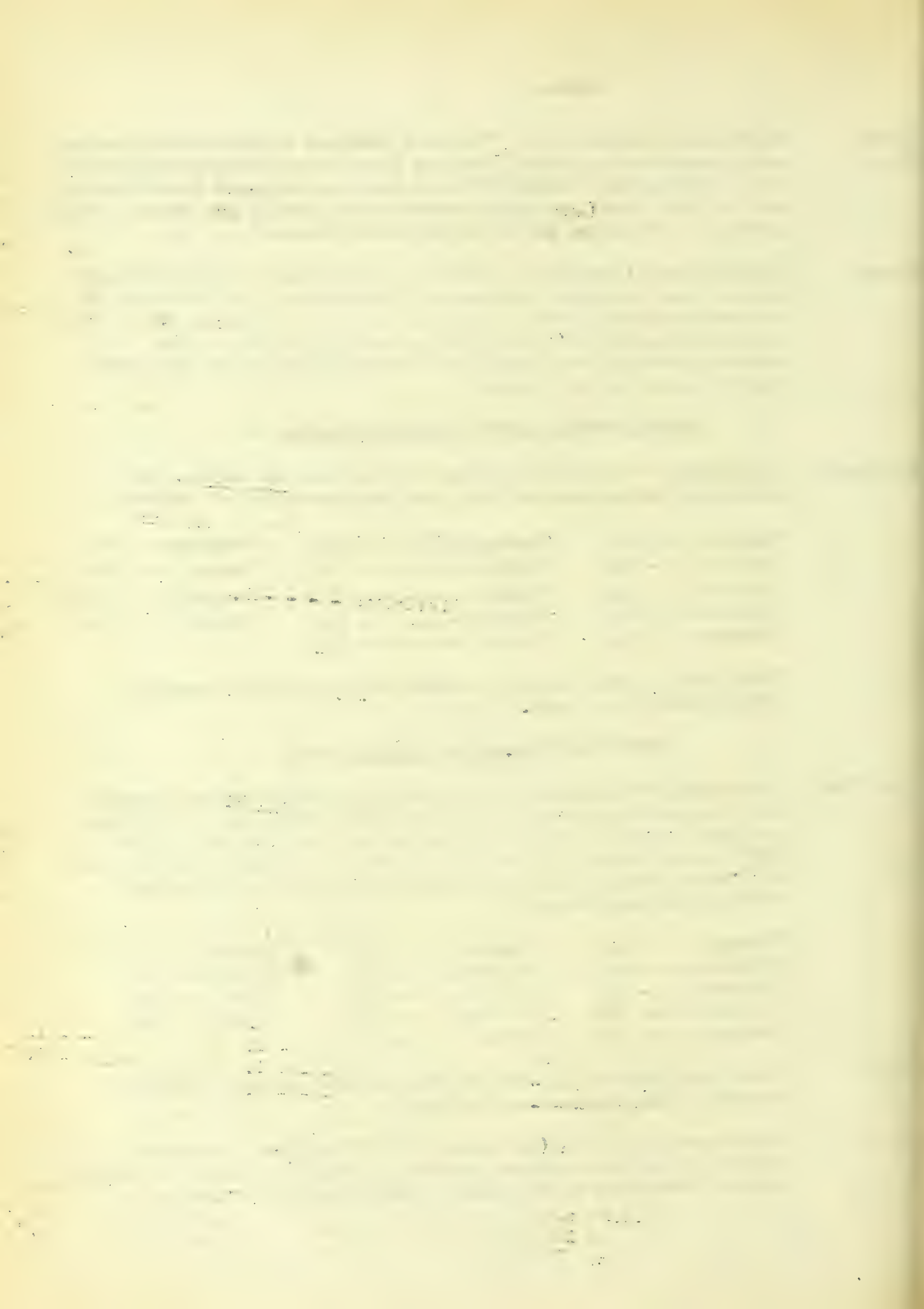
JOINTWORM (Earmolita tritici Fitch)

New York C.R.Crosby. "Preliminary jointworm survey in 14 Eastern counties shows an infestation of over 1 per cent as compared with 2.8 per cent infestation in 1901. The infestation was highest in the northwestern corner of the State, running as high as 6.6 per cent in Genesee County. The percentage infestation in the central counties was as follows:

"Cayuga - - -1.1	Niagara - - -2.2	Seneca - -0.5
Erie - - - -0.0	Onondaga - - -0.0	Tompkins- 0.0
Genesee - - -6.6	Ontario - - -0.0	Wayne - -1.8
Livingston - 0.2	Orleans - - -1.8	Wyoming - 0.8"
Monroe - - -0.0	Oswego - - -0.0	

Ohio T.H.Parks (August 1). "The wheat jointworm was not injurious in any of the 31 counties visited."

Iowa F.A.Fenton and C.J.Drake (August 18). "The wheat jointworm is bad in several counties, causing a large percentage of injured wheat. Parasites of this species are unusually abundant."



WHEAT-SHEATH GALL JOINTWORM (Harmolita vaginicola Doane)

New York C.R.Crosby. "In connection with the general wheat survey, the percentage infestation of wheat stubble by this insect was found to be 0.17 per cent in the 14 counties from which wheat samples were received. The infestation by counties was as follows:

"Cayuga - - -0.5	Niagara - - -0.0	Seneca - - -0.0
Erie - - - .0	Onondaga - -- .8	Tompkins -- .0
Genesee ----- .0	Ontario - - -.0	Wayne - - - .3
Livingston - .0	Orleans - - - .3	Wyoming - - .0"
Monroe - - - .5	Oswego - - - .0	

Ohio T.H.Parks (August 1). "The wheat-sheath jointworm was found doing some damage in the northeastern counties. It was found as far west as Clermont County. This is the first record of its being taken in western Ohio."

MORMON CRICKET (Anabrus simplex Hald.)

Colorado C.P.Gillette (July 15). "This insect has been destructive in Moffat and Rio Blanco Counties and has been very well controlled where the poisoned bran mash had been used."

Idaho Claude Wakeland (August 1). "This pest is decidedly more abundant than usual in Franklin County. A few grain fields have already been completely destroyed and gardens are badly infested. The eggs of this species are laid in the uplands bordering cultivated dry-land farms. They are present in large numbers nearly every year but do not always prove as abundant and injurious as this year."

FALSE WIREWORM (Eleodes hispilabris Say and E.carbonaria Say)

Idaho Claude Wakeland (August 1). "This insect is not as abundant as it was during 1921 except in a few restricted localities. It is too early yet to estimate its abundance in comparison with last year, however. Adults of Eleodes carbonaria Say began emerging the first week of July and adults of Eleodes hispilabris Say during the third week of July."

A TRUE WIREWORM (Dalopius sp.)

Utah I.M.Hawley (July 18). "In regard to the elaterid larvae sent to you by Mr. Justus Stevens, of this department, I might say that it was collected in Hoytsville, Summit County, Utah. The field was broken up last fall and planted to wheat after being a pasture for about twenty years."

CORN

CHINCH BUG (Blissus leucopterus Say)

New York C.R.Crosby (July 22). "This insect was observed killing grass on lawns at White Plains."



- Florida Jeff Chaffin (August 6). "Mr. Charles Stitts reports from Boynton that this insect is ruining several lawns in the vicinity of this town, the lawns being of St. Augustine grass."
- Ohio T.H.Parks. "Spring barley was entirely destroyed by the bugs in Paulding and Van Wert Counties. The northwestern counties experienced the most serious infestation. Butler, Hamilton, and Warren Counties experienced damage in a few places, owing to very dry weather which left no grass in wheat stubble. Frequent rains in July eliminated the damage in the central and north-central counties by keeping the grass green in stubble fields. In Van Wert County 14,300 gallons of tar were sold to the farmers for making barriers. These barriers worked well. Probably 85 per cent of the farmers who used them saved their grain."
- Indiana J.J.Davis (August 17). "If weather conditions are favorable, we ~~are~~ almost certain to have a very heavy infestation of chinch bugs next year as we anticipate that large numbers will go into hibernating quarters."
- Illinois W.P.Flint (August 17). "The second brood is developing in about normal numbers. Apparently will not increase much over 1921. In all but about 25 counties there is now slight to moderate infestation."
- Michigan R.H.Pettit (July 10). "I have just received information that the chinch bug is on the rampage in the vicinity of Coldwater and that it has migrated from fields of grain already and has destroyed fields of corn."
- Iowa F.A.Fenton (August 18). "The chinch bug is apparently well under control as no new reports have been received during the past month, and in counties where it was abundant methods recommended by the extension entomologist have been very effective."
- Nebraska M.H.Swenk (August 1). "In northeastern Boyd County and adjacent parts of Knox County cornfields were reported injured by the chinch bug during the third week in July when infested wheat was cut and the mostly immature bugs were forced to migrate. The injury, however, was not as extensive as had been expected."
- Missouri A.C.Burrill (July 26). "First flight noticed since April took place on this date in Saline County."

CORN EARWORM. (Heliothis obsoleta Fab.)

- Massachusetts A.I.Bourne (August 21). "Perhaps the item of prime importance in this State in view of last year's experience is a report from Bristol County of the beginning of the work this season of the corn earworm. It is already doing considerable damage and looks as though it might be even worse than last year."

- New York H.C.O'Dell (August 5). "The corn earworm appeared on August 1 at Valley Stream in Nassau County. They are quite numerous and will, no doubt, do great damage to late corn."
- Ohio T.H.Parks (August 1). "By August 1, this insect was becoming increasingly abundant and injuring sweet corn."
- .. STALK BORER (Papaipema nebris Guen., var. nitela Guen.)
- Maine E.M.Patch (July 17). "Reports of this damage so far are coming generally from the vicinity of Portland."
- Ohio T.H.Parks (August 1). "More common than usual all over the State, especially damaging corn."
- Indiana J.J.Davis (August 17). "The stalk borer continues to be frequently reported in our correspondence. However, at the present time it is not doing any damage but is working in the stalks of corn near the base, similar to the injury by the European corn borer."
- Iowa F.A.Fenton (August 18). "The stalk borer, up until recently, was still in the caterpillar stage and a large number of complaints have been received about this pest."
- .. ARMYWORM (Cirphis unipuncta Haw.)
- Nebraska M.H.Swenk. "During the last week in July the true armyworm put in an appearance in the fields of south-central Nebraska, these being mature caterpillars of the second brood. The cool spring and unusually moist spring and summer have been so favorable to armyworm increase that heavier damage was expected during early August than has yet been reported."
- FALL ARMYWORM (Laphygma frugiperda S. & A.)
- Florida Jeff Chaffin (August 10). "This armyworm has not yet made its appearance so far this year. This time last year it was present all over the State."
- Louisiana T.H.Jones (August 15). "While no general outbreak of the ~~grass~~ worm developed on lands planted with crops following overflows of the Mississippi River, recent reports received from various parts of the State indicate that the worms are at present causing noticeable damage in some sections though not necessarily in sections that were overflowed."
- .. SUGAR-CANE BORER (Diatraea saccharalis Fab.)
- Louisiana T.H.Jones (August 15). "Complaints of borer injury to corn are still being received, especially from the Parishes of East Baton Rouge, East Feliciana, and West Feliciana."

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CORN-LEAF BLOTCH-MINER (Agromyza parvicornis Loew)

Maine E.M.Patch (August 19). "Report has been received from Guilford that this insect is badly infesting a 3/4-acre patch of Golden Bantam sweet corn. Corn has been grown on this piece of land for a number of years but the damage has not been noticed heretofore. Many of the leaves are badly mined."

CORN-SILK BEETLE (Luperodes varicornis Lec.)

Texas M.C.Tanquary (August 14). "This insect has been reported as doing serious injury to field corn in western Texas and has also been reported as working on cotton."

CORN LANTERN FLY (Paregrinus maidis Ashm.)

Mississippi R.W.Harned (August 17). "The corn lantern fly was abundant on corn stalks sent in by Mr. K.L.Cockerham, of the Bureau of Entomology, from Biloxi. Last year numerous reports were received in regard to the injury caused by this insect in the southern part of this State."

PRIONUS GRUBS (Prionus fissicornis Hald.)

Nebraska M.H.Swenk (August 1). "In Johnson County a field of corn that had been planted on sod ground was almost entirely ruined by the last week in July because of prionus grubs, probably Prionus fissicornis Hald., eating up into the bottom of the cornstalk and an inch or two from the bottom into the heart of the stalk."

ALFALFA

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

Idaho Don Weelan (July 17). "Damage by this pest is very slight in the eastern area of the State and most abundant in the southwestern corner. The parasite Bathyplectes circulionis is spreading rapidly."

California (California Weekly News Letter, Volume 4, No.32). "The Bureau of Plant Quarantine, California Department of Agriculture, reports the finding of the larvae of the alfalfa weevil at Bridgeport, California. Adult weevils have been taken at the State Line in the effects and bedding of auto campers."

YELLOW-STRIPED ARMYWORM (Prodenia praxifica Grote)

California E.O. Essig (July 31). "This insect has appeared for the first time as a serious pest in the San Joaquin and Sacramento Valleys. It had been quite successfully controlled by the using of bran mash, open furrows, irrigation ditches, and cutting of the crop."

GARDEN WEBWORM (*Lexostega similalis* Guen.)

Indiana

J.J.Davis (August 17). "Following our last report on alfalfa webworm at Shipshewana, in LaGrange County, we received report as to the occurrence of this same insect in adjoining counties, i.e., Elkhart and St. Joseph. In all cases, alfalfa was attacked. However, no reports have been received since the end of July."

BLISTER BEETLES (*Meloidae*)

Kansas

Geo.A.Dean (August 16). "During the last two weeks we have received a good many reports of blister beetles injuring alfalfa and some of the garden crops. The common ones in the western part of the State are species of *Macrobasis*, one of the most common being unicolor. The common one over the eastern half of the State is *Epicauta lemniscata* Fab.

SOY BEANS

SOY-BEAN ROOT CURCULIO (*Sitona crinita* Det.)

Illinois

W.P.Flint (August 17). "The *Sitona* that has been reported in the June and July Survey Bulletins on soy-beans was found in this State in 1920. Two reports of damage, both of which were investigated, were received that year and numbers of the adult beetles were taken from soy-beans in the injured fields. These were identified at that time as *Sitona hispidulus* Fab. Both of these fields were in clover sod broken in the spring and the injury was the same in all respects as that occurring in Illinois this year. There can be little doubt that the species was the same. If this proves to be *crinita* it seems probable that it has been established in Illinois for at least three years."

COWPEA

COWPEA CURCULIO (*Chalcodermus aeneus* Boh.)

Mississippi

R.W.Harned (August 17). "Cowpea pod weevils were received in large numbers from Marshall County, where they were collected on cowpeas, and from Tunica County, where they were taken from cotton."

LESSER CORN STALK-BORER (*Ekasmopalpus lignosellus* Zell.)

Florida

Harold Mowry (August 1). "This insect was observed for the first time attacking cowpeas at Jacksonville today."

VELVET-BEAN CATERPILLAR (*Anticarsia gemmatilis* Hubn.)

Florida

Jeff Chaffin (August 1). "This insect appeared at Gainesville today, this being 15 days earlier than it appeared last year, It should reach the Georgia State line by August 25."

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TIMOTHY

WHEAT-HEAD ARMYWORM (Heliophila albilinea Hubn.)

Iowa G.C. Edler (Bureau of Markets, August 14). "Our correspondent has just completed a survey of the timothy seed situation in south-central Iowa and finds that the head worm is quite abundant but not serious enough to occasion cutting of the timothy for hay."

SORGHUM WEBWORM (Celana sorghiella Riley)

Missouri L. Haseman (June 30). "This insect is more abundant than usual in Cape Girardeau County. As soon as the volunteer rye heads have passed the milk stage it turns its attention to timothy seed heads."

GENERAL FEEDERS

GRASSHOPPERS (Acridiidae)

Missouri L. Haseman (July 26). "The differential grasshopper has been much worse than usual in places in central and eastern Missouri this year. It is not, however, a general scourge as in some years."

Mississippi R.W. Harned. "Grasshoppers, especially Melanoplus differentialis Thos. and Schistocerca americana Drury, are more abundant than usual in Mississippi this summer. These reports come especially from the northern half of the State."

Colorado C.P. Gillette (July 15). "According to Mr. C.L. Corkins, the only outstanding species so far has been Melanoplus bivitatus Say with M. femur-rubrum DeG. M. atlantis Riley, and M. packardii Scud. present in moderate numbers. The differential grasshopper has not been abundant in any locality that has come under our observation this summer. We have been sending out large quantities of concentrated crude white arsenic, amyl acetate, and salt for use by the farmers and so far with very satisfactory results."

Idaho Claude Wakeland (July 25). "Grasshoppers are doing about the average amount of damage to alfalfa and grain this year, damage most severe over the southern third of the State and in the two northern most counties. In the northern outbreak about 90 per cent of the hoppers were Camula pellucida Scud. according to Mr. Whelan."

WHITE GRUBS (Phyllophaga spp)

Massachusetts A. I. Bourne (August 21). "White grubs are reported to us from Bristol County as doing quite serious injury to the hay crop and corn, potatoes, and strawberries. In some cases they have practically ruined the crops."

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Rhode Island

A.E.Stene (August 3). "In my experience I have never seen white grubs in such large numbers. From one to two dozen larvae would be found in every hill of corn in places. A number of reports of a similar nature were reported from other parts of the State. The outbreak investigated was along the eastern border."

Indiana

J.J.Davis (August 17). "During the past month white grubs have been reported from central Indiana, the crop^s commonly injured being grass of golf courses, strawberries, vegetable crops, and in greenhouse bench soil."

Nebraska

M.H.Swenk (August 1). "White grubs have been reported repeatedly as destroying strawberry beds, especially those set out this spring in various parts of eastern Nebraska, and in Omaha there has been some injury to blue-grass lawns. This injury to lawns began to show up in the last week of July."

North
Dakota

R.L.Webster (August 15). "White grubs are reported as seriously damaging potatoes in Barnes and Pembina Counties. In the Barnes County outbreak injury occurred in a field that was in wheat in 1921 and for several years previously. There are no trees near this field."

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeG.)

York C. R. Crosby and assistants (August 5). "During the latter part of July the green apple aphid developed to a dangerous extent in some orchards in Orleans and Monroe Counties. They are still present in some orchards in Monroe County."

CODLING MOTH (Carpocapsa pomonella L.)

York L. F. Strickland. "Emergence of the codling moth was practically completed on the ridge and escarpment by June 25 throughout the rest of the county, to the north moths continued to emerge until July 7. On July 5, parasitism of the codling moth eggs by Trichogramma minutum Riley began with 9 per cent infestation, and by July 7 had reached 50 per cent infestation in one orchard."

C. R. Crosby and assistants (August 12). "The codling moth is developing very slowly because of cool weather. Late hatching of the first brood still continues along the Lake Shore."

Pennsylvania S. W. Frost (August 15). "Examinations of the drop fruit show a large percentage of moth injury this summer. Most of the moths entered the calyx end of the apple. The amount of side worm injury thus far has been slight."

Illinois S. C. Chandler (July 31). "Apples on unsprayed trees average 13.6 per cent infested with second-brood larvae. Worms hard to find in sprayed orchards."

Washington Bureau of Entomology Monthly Letter No. 99. "E. J. Newcomer reports that the Bureau's efforts in importing codling moth parasites from the east for establishment in orchards around Yakima, under way for the past two or three years, have been successful, in the case of one species at least, Bassus carpocapsae Cushman which has been secured from band material collected last fall."

FRUIT-TREE LEAF-ROLLER (Cacoecia argyrospila Walk.)

York G. E. Smith. "Leaf-roller moths were found unusually abundant in a pear orchard during the early part of July. Their injury is apparent on many apple orchards throughout Orleans County."

RED-BANDED LEAF-ROLLER (Eulia velutinana Walk.)

Pennsylvania S. W. Frost (August 18). "Abundant in the third generation, the larvae producing fresh injury on the fruits of apple."

TENT CATERPILLAR (Malacosoma americana Fab.)

Massachusetts A. I. Bourne (August 21). "As was to be expected from indications this spring, the egg masses of the apple tent caterpillar are showing up in much greater abundance than usual."

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1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them. The list includes names such as "John A. Smith", "Mary E. Jones", and "Robert L. Brown".

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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

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FALL WEBWORM (Hyphantria cunea Drury)

- Massachusetts E. M. Patch (August 3). "The fall webworms are abundant in Penobscot County at present."
- Massachusetts A. I. Bourne (August 21). "In the vicinity of Amherst these insects appeared to be in much greater abundance than usual. Reports from the eastern part of the State, however, indicate that they are approximately in normal abundance."
- Massachusetts G. A. Dean (August 16). "The common fall webworm is appearing over the eastern part of the State. It is on apple, mulberry, elm, and plum."
- Mississippi R. W. Harned (August 17). "The second generation of the fall webworm is now beginning to appear. The first generation was so abundant that these insects will undoubtedly cause serious damage in this State if natural enemies do not hold them in check."

YELLOW-NECKED CATERPILLAR (Datana ministra Drury)

- New York C. R. Crosby (July 26). "Infested material was received from Croton Lake today."
- New Jersey R. B. Lott (August 3). "The yellow-necked caterpillar was reported as injurious from New Brunswick."
- Massachusetts F. A. Fenton (August 13). "The yellow-necked caterpillar has been the principal leaf-feeding species this season."

FALSE APPLE RED BUG (Lygidea mendax Reut.)

- Pennsylvania S. W. Frost (August 15). "The drop fruit showed considerable injury by this species."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

- Pennsylvania S. W. Frost (August 15). "This insect has been noticeably scarce this season, especially on the fruit."
- Mississippi R. W. Harned (August 17). "The San Jose scale is probably abundant in every county in Mississippi. During the present summer we have received the normal number of complaints in regard to this pest."

SCURFY SCALE (Chionaspis furfura Fitch)

- Pennsylvania S. W. Frost (August 15). "This species is much more in evidence in orchards of Adams County than the other apple scales."

Rhabdopteryx picipes Oliv,

- New York P. D. Rupert (July 15). "This beetle has caused considerable injury on Ben Davis in some orchards in Wayne County. This year the lime did not do so much good as it did last year owing to the heavy rain which fell at the time the beetles were working."

THE UNIVERSITY OF CHICAGO

1. The first of the three main branches of the University is the Faculty of Arts and Sciences. This branch is the largest and the most diverse, encompassing a wide range of disciplines from the natural sciences to the humanities. It is the primary source of undergraduate and graduate education for the University.

2. The second main branch is the Faculty of Divinity. This branch is responsible for the theological education of students and the training of clergy. It is a unique institution within the University, reflecting its historical roots in the Christian faith.

3. The third main branch is the Faculty of Medicine. This branch is dedicated to the study and practice of medicine, and is the primary source of medical education and research at the University. It is a highly specialized and competitive field of study.

4. The Faculty of Law is another important branch of the University. It is responsible for the education and training of lawyers, and is a highly respected institution within the legal community. It provides a rigorous and comprehensive education in the principles and practice of law.

5. The Faculty of Business Administration is a relatively new branch of the University. It is dedicated to the study and practice of business, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of business administration.

6. The Faculty of Education is another important branch of the University. It is responsible for the education and training of teachers, and is a highly respected institution within the educational community. It provides a comprehensive education in the principles and practice of education.

7. The Faculty of Social Sciences is another important branch of the University. It is dedicated to the study and practice of social sciences, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of social sciences.

8. The Faculty of Natural Sciences is another important branch of the University. It is dedicated to the study and practice of natural sciences, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of natural sciences.

9. The Faculty of Engineering is another important branch of the University. It is dedicated to the study and practice of engineering, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of engineering.

10. The Faculty of Architecture is another important branch of the University. It is dedicated to the study and practice of architecture, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of architecture.

11. The Faculty of Music is another important branch of the University. It is dedicated to the study and practice of music, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of music.

12. The Faculty of Fine Arts is another important branch of the University. It is dedicated to the study and practice of fine arts, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of fine arts.

13. The Faculty of Journalism is another important branch of the University. It is dedicated to the study and practice of journalism, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of journalism.

14. The Faculty of Public Administration is another important branch of the University. It is dedicated to the study and practice of public administration, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of public administration.

15. The Faculty of Political Science is another important branch of the University. It is dedicated to the study and practice of political science, and is a highly competitive and specialized field of study. It provides a comprehensive education in the principles and practice of political science.

APPLE FLEA-WEEVILS (Orshestes palliicornis Say and O. canus Horn)

- Illinois S. C. Chandler (July 31). "Practically all weevils are now in hibernation. One weevil was observed on a tree at Olney today."
- Michigan R. H. Pettit (July 18). "This insect was very plentiful on the foliage of a single variety of apple at Augusta. The beetles had eaten pits in the under surface of the leaves not quite coming through to the upper surface. It seems to confine its attack to Northern Spy, as other varieties were eaten very sparingly on adjoining trees."

RED SPIDER (Tetranychus telarius L.)

- Massachusetts A. I. Bourne (August 21). "Considerable bronzing of ornamental and fruit stock is noticed as a result of these pests. Damage reported from practically all parts of the State, not as serious as usual, probably owing to wet season."
- California E. O. Essig. "This insect has damaged from 10 to 20 per cent of the crop in the Sacramento Valley. It was effectively controlled by using liquid lime-sulphur, soluble sulphur, and wettable sulphur, sprays and by dusting with flowers of sulphur."

PEAR

PEAR THRIPS (Thrips fragrans Uzel.)

- York G. E. Smith. "Found rather abundant in many young apple orchards in Orleans County early in July."

PEAR PSYLLA (Psylla pyricola Foerst.)

- York P. J. Parrott (July 15). "In one orchard the pear psylla is very abundant and has already caused very much discoloration of the foliage and fruit."
- L. F. Strickland. "The second-brood nymphs had completed their appearance in Niagara County by July 8, and heavy lime nicotine sprays were applied."

PEAR-LEAF BLISTER MITE (Eriophyes pyri Pgst.)

- York C. R. Crosby (July 20). "Infested material was sent in from Wells-ville."
- F. A. Fenton (August 18). "The pear-leaf blister mite appeared in several nurseries and is reported to be quite serious."

QUINCE CURCULIO (Conotrachelus crataegi Walsh)

- York E. O. Shear (July 2). "The quince curculio has been a serious pest in a few pear orchards."

It is a very common mistake to suppose that the only way to get the best of the land is to get the best of the water.

THE HISTORY OF THE RIVER

The history of the river is a story of many centuries. It is a story of the people who have lived along its banks, and of the changes that have come upon the land. The river has been a source of life and death, of joy and sorrow, of peace and war. It has been a witness to the rise and fall of many a kingdom, and to the passing of many a generation. The river has been a part of the life of the people, and the people have been a part of the life of the river. The river has been a source of food and drink, of shelter and protection, of love and friendship. It has been a part of the life of the people, and the people have been a part of the life of the river. The river has been a source of life and death, of joy and sorrow, of peace and war. It has been a witness to the rise and fall of many a kingdom, and to the passing of many a generation. The river has been a part of the life of the people, and the people have been a part of the life of the river. The river has been a source of food and drink, of shelter and protection, of love and friendship. It has been a part of the life of the people, and the people have been a part of the life of the river.

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PEAR AND CHERRY SAWFLY (Caliroa cerasi L.)

Don B. Whelan (July 25). "This pest is much more abundant than it was during 1920 and 1921. Very few trees in southwestern Idaho are free from infestation, and some are nearly defoliated. The defoliation has seriously affected the vitality of the trees in certain districts and undoubtedly will reduce the crop next year."

PEACH

PEACH BORER (Aegeria exitiosa Say)

R. W. Harned (August 17). "The peach borer is causing about the usual amount of damage in this State."

(California Weekly News Letter, Volume 4, No. 32 & 33). "County Horticultural Commissioner for Kings County reports intercepting 10,000 prune trees from Oregon badly infested with the peach-tree borer, a pest not known to exist in this county. One of the infested counties of the State had placed a pooled order for more than 3 tons of paradichlorobenzene to be used to control this pest."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

J. J. Davis (August 17). "Shot-hole borers have frequently been reported from all parts of the State during the past month. We are receiving no reports of injury from well kept commercial orchards."

G. A. Dean (August 16). "Over the entire State the fruit-tree bark-beetle is seriously injuring cherry and plum."

R. W. Harned. "Barkbeetles, probably this species, have been reported as seriously injuring peach trees, at numerous places in this State."

ORIENTAL PEACH MOTH (Laspeyresia molesta Busck)

(California Weekly News Letter, Volume 4, No. 32). "Port inspectors of San Francisco intercepted a lot of Japanese pears infested with lepidopterous larvae. Specimens sent to Washington were determined as the Oriental peach moth."

A SAWFLY (Tenthredinidae)

R. W. Harned (August 17). "Sawfly larvae have been received from Wilkinson County where they were reported as defoliating peach trees."

CHERRY

CHERRY FRUIT FLY (Rhagoletis cingulata Loew)

(California Weekly News Letter, Volume 4, No. 32). "This insect has been intercepted on shipment of Oregon cherries. While this pest is common in Oregon, this is the first time it has been brought into California from that State."

THEY AND CHERRY (Gall) (Gall)

This is a very common gall on the leaves of the cherry tree. It is a small, round, yellowish-brown gall, about 1/4 inch in diameter. It is usually found on the upper surface of the leaf, near the midrib. The gall is composed of a mass of small, round, yellowish-brown cells, which are arranged in a regular, hexagonal pattern. The gall is usually found on the upper surface of the leaf, near the midrib. The gall is composed of a mass of small, round, yellowish-brown cells, which are arranged in a regular, hexagonal pattern.

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CHERRY FRUIT SAWFLY (Hoplocampa cooki Clarke)

Washington A. L. Melander (August 26). "This insect has been reported this summer for the first time in Washington, from Everett."

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

ane E. M. Patch (July 17). "The plum curculio is reported as abundant in the vicinity of Portland in both plums and apples. It is abundant all the way to Bangor."

York C. R. Crosby and assistants. "This insect has been reported as doing more or less serious damage from Genesee, Westchester, and Orleans Counties. Practically the entire crop in neglected orchards was ruined by this pest in the latter county."

Pennsylvania S. W. Frost (August 15). "Has not been as numerous on apple this season as during the past two seasons."

Mississippi R. W. Harned (August 17). "The plum curculio has caused some loss to peaches throughout Mississippi this summer."

CURRENT

IMPORTED CURRENT WORM (Pteronidea ribesi Scop.)

Ohio Claude Wakeland (August 1). "This insect was so abundant in the Rexburg district that bushes were generally defoliated and a few people resorted to sprays in a community where they have heretofore been remarkably free from insect pests."

PECAN

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

Mississippi R. W. Harned (August 17). "The pecan shuckworm has been received from numerous places in the State. Many reports have been received in regard to the shedding of pecans. Some reports indicate 90 per cent of the pecans fallen. This seems to be due to a combination of several causes including especially the shuckworm, pecan scab, and black pit. In one instance the pecans received were infested with weevil larvae."

SPITTLE INSECTS (Cercopidae)

Mississippi R. W. Harned (August 17). "Several complaints have been received in regard to the injury of pecans by spittle insects."

CONFIDENTIAL - SECURITY INFORMATION

1. The following information was obtained from a confidential source who has provided reliable information in the past.

ITEM

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CONFIDENTIAL - SECURITY INFORMATION

10. The following information was obtained from a confidential source who has provided reliable information in the past.

ENGLISH WALNUT

CODLING MOTH (Carpocapsa pomonella L.)

California (California Weekly News Letter, Volume 4, No. 33). "The first discovery of the codling moth on English walnuts in San Diego County has just been made. The infested nuts come from a small grove near Vista. We do not as yet know how general the infestation is in that neighborhood."

CRANBERRY

BLACK VINE WEEVIL (Brachyrhinus sulcatus Fab.)

Washington A. L. Melander (August 26). "This species was found abundantly in cranberry bogs in southwestern Washington, having completely killed out acreages of cranberry plants. Because of the unusually dry season cranberry growers have been inclined to attribute the weakness of the plants to drought but the prevalence of larvae in the soil would account for the weakening and death of the plants. The roots have had the bark stripped from them. It is interesting to note that we have found larvae of B. sulcatus as deep as 22 inches below the surface in an apple orchard at Walla Walla last month."

GRAPE

(GRAPE PHYLLOXERA (Phylloxera vitifoliae Fitch))

New York C. R. Crosby (July 24). "Infested leaves were sent in from Schuyler County on this date."

Illinois W. P. Flint (August 17). "This insect has been reported from all sections of the State and is very much more numerous than usual."

Iowa F. A. Fenton (August 18). "The grape phylloxera is the most destructive insect to grape in Iowa this year."

Missouri A. C. Burrill (July 26). "One of the worst centers of the grape phylloxera yet located in this State has been discovered in Saline County. This insect in conjunction with the leafhopper injured 80 per cent of the leaves. The crop does not seem to be damaged, however."

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

Ohio (Bureau of Entomology Monthly Letter No. 99). "In Ohio and Michigan the grape-berry moth has caused more than the usual amount of damage to the grape clusters by feeding on the stems and buds during the blossoming period."

Michigan R. H. Pettit (August 21). "The growers are gaining control of the grape-berry moth which is in comparatively small numbers since our campaign of the past two seasons."

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1957

1. The first group of people who are interested in the study of the history of the United States are the people who are interested in the history of the United States.

1. The first step in the process of the investigation is the identification of the problem. This is done by the investigator who is responsible for the study. The next step is to collect data. This is done by the investigator who is responsible for the study. The next step is to analyze the data. This is done by the investigator who is responsible for the study. The next step is to interpret the data. This is done by the investigator who is responsible for the study. The next step is to report the results. This is done by the investigator who is responsible for the study.

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THE UNIVERSITY OF CHICAGO

1. The first part of the document is a letter from the President of the United States to the President of the Senate, dated January 1, 1901. The letter is signed by William McKinley and is addressed to Charles McNary. The letter is a copy of a letter that was sent to the President of the Senate by the President of the United States.

1977-1978 (1977-1978)

1. The first of these is the fact that the majority of the population of the United States is now living in urban areas. This is a result of the process of urbanization, which has been going on since the beginning of the 20th century. The population of the United States has increased from about 100 million in 1900 to over 200 million in 1950. At the same time, the population of rural areas has decreased from about 100 million in 1900 to about 50 million in 1950. This has led to a concentration of the population in urban areas, which has had a number of important consequences. One of the most important is that it has led to a change in the way of life of the majority of the population. In rural areas, the population is more closely tied to the land, and the way of life is more traditional. In urban areas, the population is more mobile, and the way of life is more modern. This has led to a number of changes in the economy, in the culture, and in the politics of the United States. For example, the concentration of the population in urban areas has led to the development of a large service sector, which is now a major part of the economy. It has also led to the development of a more modern culture, which is more concerned with individualism and progress. Finally, it has led to the development of a more centralized political system, in which the federal government has a much greater role than in the past.

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

GRAPE LEAF-FOLDER (Desmia funeralis Huebn.)

ansas G. A. Dean (August 16). "In many parts of the State the grape leaf-folder is more common on the grape than I have ever known it to be before. Some growers report nearly all the leaves infested."

Mississippi R. W. Harned (August 17). "The grape leaf-folder has been received from several points in this State."

GRAPE-BLOSSOM MIDGE (Contarinia johnsoni Sling.)

Michigan (Bureau of Entomology Monthly Letter No. 99). "At Paw Paw bud clusters infested with the midge were observed on June 8. This insect had not been reported previously from that section."

GRAPE ROOTWORM (Fidia viticida Walsh)

Missouri A.C. Burrill (July 26). "Never have observed so much riddling of the leaves as was noticed in Saline County this month."

GRASSHOPPERS (Acridiidae)

California (California Weekly News Letter, Volume 4, No. 29). "County Horticultural Agent of Yuba County reports that grasshoppers were attacking 175 acres of newly planted raisin vineyard. Bran mash was applied immediately and some adjoining land was burned over. Splendid control resulted and very little damage was done."

GRAPE LEAFHOPPER (Erythroneura comes Say)

Massachusetts E. R. Farrar (August 15). "This insect is very much less abundant than normally in Lincoln County."

New York L. F. Strickland (July 22). "Hoppers are especially severe in many vineyards, some being gray in color. On July 21 adults were beginning to appear. The infestation ranges between 70 and 125 nymphs per leaf. Relatively few growers made the Bordeaux nicotine application recommended for the infestation on June 29."

A. L. Pierstorff (July 8). "Leafhopper nymphs have been found in large numbers in Monroe County."

Ohio (Bureau of Entomology Monthly Letter No. 99). "Mr. G. A. Runner reports severe injury from grape leafhoppers in vineyard sections of New York, Ohio, and Michigan, and large numbers of grape growers have commenced spraying operations for the control of this pest."

Michigan R. H. Pettit (August 21). "Mr. Harman who has just returned from an examination of the vineyards in the grape belt reports that around Lawton and Paw Paw leafhoppers are in smaller numbers than in the past. The later foliage looks healthy and green while the earlier foliage shows the effects of these insects. This seems to indicate very effective control by spraying."

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Missouri A. C. Burrill (July 26). "This insect is of but minor importance in this State. I have not yet seen what might be called a heavy epidemic."

CITRUS AND SUBTROPICAL FRUITS

MEXICAN FRUIT FLY (*Anastrepha ludens* Loew)

California (California Weekly News Letter, Volume 4, No. 33). "Quarantine Officers at San Pedro and San Francisco report numerous seizures of mangoes, oranges, grapes, avocados, and sapotes from Central American ports containing living larvae of the Mexican fruit fly. Some sapotes taken at San Pedro were shipped from Corinto, Nicaragua. Upon examination 7 larvae of this insect were found in one of the fruits. If these fruits were actually grown in Nicaragua this is a most interesting finding since the fruit fly has not previously been reported from that country."

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata* Wied.)

California (California Weekly News Letter, Volume 4, No. 33). "Quarantine officer at Los Angeles has taken many larvae and pupae of the Mediterranean fruit fly in an express package from Honolulu."

PAPAYA FRUIT FLY (*Toxotrypana curvicauda* Gerst.)

Canal Zone (Bureau of Entomology Monthly News Letter No. 99). "The papaya fruit fly is very well distributed wherever papayas are grown. In some of the papaya groves the damage due to this species amounts to 90 per cent of the crop. In some parts of the interior of Panama it is impossible to grow papayas without having them infested, unless the very thick-fleshed varieties are grown. The picking and destroying of infested papayas and allowing chickens to live in the groves are the two most efficient control measures."

CITRUS BLACK-FLY (*Aleurocanthus woglumi* Ashby)

Canal Zone (Bureau of Entomology Monthly News Letter No. 99). "The citrus black-fly, introduced into the Canal Zone from the West Indies, is rapidly spreading, according to Mr. James Zetek. The pest is now well distributed for about 12 miles out from Panama City along the Canal Zone, and has been introduced into the interior at Aguadulce. Two entomogenous fungi are following the black fly, but are not sufficient to check it."

MEALYBUG (*Pseudococcus* sp.)

California (California Weekly News Letter, Volume 4, No. 33). "The first infestation of mealybug ever found in San Benito has been discovered on some ornamental shrubs."

THE UNIVERSITY OF CHICAGO
DEPARTMENT OF THE HISTORY OF ARTS
CHICAGO, ILLINOIS

RESEARCH REPORT

THE HISTORY OF ARTS

The history of art is a discipline that has evolved over time, reflecting the changing needs and interests of society. It is a field that encompasses a wide range of subjects, from the visual arts to the performing arts, and from the history of art to the theory of art. The history of art is a discipline that has evolved over time, reflecting the changing needs and interests of society. It is a field that encompasses a wide range of subjects, from the visual arts to the performing arts, and from the history of art to the theory of art.

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TRUCK-CROP INSECTS

MISCELLANEOUS FEEDERS

BLISTER BEETLES

- Side Island A. E. Stene (August 3). "The margined blister beetle is reported as attacking potatoes and a number of other crops so seriously that growers are alarmed. This is the first time that serious damage has been reported to this station."
- ova F. A. Fenton (August 18). "Two species of blister beetles, Epicauta cinerea Foerst. and E. vittata Fab., are unusually abundant, the latter being reported from radish, lettuce, beans, turnips, tomatoes, and melons."
- eraska M. H. Swenk (August 1). "The gray blister beetle is reported from eastern Nebraska as injuring potatoes, tomatoes, beans, turnips, melons, etc."
- Missouri A. C. Burrill (August 1). "Reports of injury are starting to come in from these insects though they do not seem as bad as last year."
- Mississippi R. W. Harned (August 17). "Blister beetles have been reported from several different places in the State as seriously injuring gardens."

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

- New York C. R. Crosby and assistants. "By the end of July, potato beetles were reported as being numerous in many fields in Monroe and Genesee Counties."
- Idaho Don B. Wheland (July 31). "This insect was injuriously abundant last year, but very few have been observed this year and they have done no injury."

POTATO LEAFHOPPER (Empoasca mali LeB.)

- New York C. R. Crosby and assistants (August 12). "During the last few days in July and the first half of August the potato leafhopper and hopperburn were reported from many places in Onondaga, Monroe, and Nassau Counties. In Nassau County hopperburn is showing up in severe proportions."
- Liana J. J. Davis (August 17). "The potato leafhopper is quite abundant, especially in the northern half of the State."

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1990. *Journal of the American Medical Association*, 264: 1033-1037.

T. H. Parks. "These insects are very abundant on potatoes in all parts of the State. Early varieties were killed by hopperburn before maturity, late varieties now becoming affected even where mulched with straw and thus rendered immune to drought. Spraying demonstrations with Bordeaux 5-7-50 showing up well."

R. H. Pettit (August 15). "The potato leafhopper is rather troublesome this year on potatoes and appearing in large numbers on alfalfa. It seems that alfalfa, which for some reason or another lacks vigor, is immediately attacked by the leafhoppers. In many cases associated with the leafhopper injury is the leaf spot Pseudopeziza medicaginis."

POTATO TUBER MOTH (Phthorimaea operculella Zell.)

R. W. Harned (August 17). "The insect reported under this name in the July number of the Survey Bulletin, page 131, has been determined as an obscure Gnorimoschema by Mr. August Busck."

FALSE CHINCH BUG (Nysius ericae Schill.)

Claude Wakeland (July 25). "The worst outbreak in the history of the State is under way in Jerome, Bingham, and Rexburg Counties. The insect produces severe curling and browning of the leaves, and portions of some fields are completely destroyed, especially around the edges. It has also caused total loss to a few patches of strawberries and raspberries."

TARNISHED PLANT-BUG (Lygus pratensis L.)

J. J. Davis (August 17). "The tarnished plant-bug has been reported injuring buds of various plants, especially potatoes."

Herbert Osborn (August 1). "The tarnished plant-bug has been injurious to potato tips in two counties."

Claude Wakeland (August 1). "About the middle of July these insects were noticed to be very abundant in one potato field in Rexburg County. Infested plants wilted and those that had been injured for some time were noticeable by the leaves turning brown, especially around the edges. Injury usually worse on the edge of the fields near alfalfa."

CABBAGE

IMPORTED CABBAGE WORM (Pontia rapae L.)

A. I. Bourne (August 21). "The imported cabbage worm is generally about normally abundant; in some fields, however, they are found to be doing considerable damage."

C. R. Crosby and assistants. "These insects are moderately abundant but causing no unusual damage this year."

A.C. Burrill (July 26). "In Saline, Boone, and Jackson Counties this insect is proving very troublesome and spraying undoubtedly will be practiced in these counties in the near future. In Remiscot County 45 per cent of the leaves were damaged by these

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Mississippi R. W. Harned (August 17). "The imported cabbage worm is not as abundant as during normal years."

HARLEQUIN BUG (Murgantia histrionica Hahn)

Mississippi R. W. Harned (August 17). "The harlequin cabbage bug has been reported as appearing in injurious numbers in Lee and Panola Counties."

STRAWBERRY

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

F. A. Fenton (August 18). "The strawberry leaf-roller has been especially injurious in several localities."

D. B. Whelan (July 25). "Damage in a few restricted fields at Blackfoot amounted to 25 per cent of the crop. This insect is also attacking strawberries in Bingham, Minidoka, Bonneville, Cassia, Jerome, Washington, Ada, and Canyon Counties."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

York C. R. Crosby (July 25). "This insect is found all over Hudson County attacking strawberries."

STRAWBERRY ROOT-WEEVIL (Brachyrhinus ovatus L.)

Washington A. L. Melander (August 26). "This insect has been very destructive, especially in western Washington this year. It is now becoming a nuisance by congregating in houses adjacent to strawberry fields for hibernation."

STRAWBERRY CROWN-BORER (Tyloclerum fragariae Riley)

F. A. Fenton (August 18). "The strawberry crown-borer has been especially injurious in several localities during the latter half of July and the first half of August."

WHEAT WIREWORM (Agriotes mancus Say)

Pennsylvania F. H. Chittenden (August 14). "Have received information to the effect that growers at Luthersberg are unable to cope successfully with this insect in strawberry patches."

SPITTLE INSECTS (Aphrophora spp.)

Washington A. L. Melander (August 26). "These insects have been reported as particularly abundant, especially in western Washington this summer, in some cases in strawberry fields reducing the yield to 50 per cent. When we have several insects on every plant the stems are shortened and the leaves crinkled."

1. The first part of the report deals with the general situation of the country and the progress of the work during the year.

2. The second part of the report deals with the results of the work done during the year.

3. The third part of the report deals with the financial statement of the year.

4. The fourth part of the report deals with the general remarks of the committee.

5. The fifth part of the report deals with the conclusions of the committee.

6. The sixth part of the report deals with the recommendations of the committee.

7. The seventh part of the report deals with the summary of the work done during the year.

8. The eighth part of the report deals with the general remarks of the committee.

9. The ninth part of the report deals with the conclusions of the committee.

10. The tenth part of the report deals with the recommendations of the committee.

11. The eleventh part of the report deals with the summary of the work done during the year.

12. The twelfth part of the report deals with the general remarks of the committee.

13. The thirteenth part of the report deals with the conclusions of the committee.

14. The fourteenth part of the report deals with the recommendations of the committee.

BEAN

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

- North Carolina Franklin Sherman (July 18). "The two localities mentioned in the last number of the Survey Bulletin are Patrick in Cherokee County and Brasstown on the edge of Clay County."
- North Carolina Neal F. Howard (August 28). "A report has been received that the Mexican bean beetle has been found in Swain County. Three counties are now found to be infested in the west most part of the State."
- Georgia Neal F. Howard (August 28). "The Mexican bean beetle has been reported as occurring in Anderson County during the past month."
- Georgia Neal F. Howard (August 28). "The Mexican bean beetle is causing heavy damage in Georgia. Total destruction of garden beans occurring in some places. In addition to the counties infested in 1921 this beetle has been found in the following counties: Campbell, Clayton, Coweta, Fayette, Henry, Morgan, Newton, Oconee, Rockdale and Walton."
- Kentucky Neal F. Howard (August 28). "Heavy infestation is reported in Kentucky. This insect was not numerous enough in the fall of 1921 to cause any reduction in the crop. In addition to the counties reported last year it has been found in Knox, Madison and Wayne Counties."
- Tennessee Neal F. Howard (August 28). "Total destruction of beans took place in Tennessee about Chattanooga this year. The price of beans on the Chattanooga market is \$3.75 per bushel. In addition to the counties reported last year, this insect has been found in Bedford, Knox, Lawrence, Lewis, Maury, Marshall, Rutherford, Sevier and Wayne Counties."
- Alabama Neal F. Howard (August 28). "On account of the late emergence of the beetles from hibernation this year many early bean plantings in Alabama yielded at least one good picking. This situation together with the large shipments of beans from other points not heavily infested brought down the price of beans on the Birmingham market to a low figure. For the past month, however, the price has risen steadily and is now \$3.75 per bushel wholesale."
- Mississippi R. W. Harned (August 17). "So far the Mexican bean beetle has not been reported from this State."

CUCUMBER

BANDED CUCUMBER BEETLE (Diabrotica balteata Lec.)

- Mississippi R. W. Harned (August 17). "This insect is quite abundant this year, and has been especially injurious in the southwestern part of the State on beans, peas, potato, and cucumbers. Ten years ago this insect was not known in Mississippi; 5 years ago it was rather rare and only a few complaints were received in regard to it. At the present time, however, it is quite abundant in all parts of the State and apparently is as serious, or nearly as serious, as the other two common Diabroticas."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Massachusetts A. I. Bourne (August 21). "This insect is reported as being decidedly more abundant than usual in Lincoln County. About the 10th of August the new brood of adults were beginning to appear in Amherst."
- New York M. D. Hammond (July 29). "Larvae in the roots are doing considerable damage in one planting of cucumbers in Orange County."
- Indiana J. J. Davis (August 17). "The striped cucumber beetle continues to occur in destructive numbers throughout the State, and we received many reports of injury to cucumber and melons by the larvae."
- Mississippi R. W. Harned (August 17). "The striped cucumber beetle has apparently caused more damage in Mississippi this year than during any previous year of which we have record. Complaints have been received especially in regard to injury to watermelons. Many growers had to replant several times before getting a stand. Others failed entirely to raise any watermelons on account of the abundance of these beetles."

MELON

MELON APHID (Aphis gossypii Glov.)

- Massachusetts A. I. Bourne (August 21). "A few instances of this pest in unusual numbers are being brought to our attention."
- Indiana J. J. Davis (August 17). "The melon aphid is showing up in very destructive numbers in a few localities."
- F. A. Fenton (August 18). "The usual number of inquiries are received concerning the melon aphid from the Mississippi River Trucking districts."
- Nebraska M. H. Swenk (August 1). "The melon aphid has been normally destructive during the entire month of July."
- California R. E. Campbell (August 15). "Infestation appeared in a number of fields in Los Angeles County during the latter part of July continuing into August, but most of the growers immediately used nicotine dust and prevented serious damage."

SQUASH

SQUASH BORER (Melittia satyriniformis Huebn.)

- Massachusetts H. T. Fernald (August 21). "Mr. Worthley reports that the squash-vine borers are maturing. The larvae are beginning to leave the plants. Fifty per cent or more of the plants in some fields are infested but the abnormally wet season promoted the growth of the secondary roots so that the injury to the crop will probably be much less than is ordinarily the case."

THEORY OF THE EARTH

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- York C. R. Crosby (July 26). "This insect was sent in as doing rather serious damage to squash at Buhnetady."
- Illinois W. P. Flint (August 17). "This insect is very abundant in northern Illinois this year."
- Dana J. J. Davis (August 17). "The squash-vine borer has been reported in abundance this season, particularly in the southern half of the State."
- Missouri A. C. Burrill. "This insect has been reported from several parts of the State this year."

SQUASH BUG (Anasa tristis DeG.)

- Massachusetts H. T. Fernald (August 21). "The squash bug appears to be generally less abundant than for several seasons past."
- York A. L. Pierstorff (July 15). "Squash bugs are numerous on plantings in Monroe County this year."
- Dana J. J. Davis (August 17). "Squash bugs have been hatching during the last week or two in central Indiana. From all indications there will be the usual large infestation this year."
- Wisconsin M. H. Swenk (August 21). "The squash bug has been normally destructive during the entire month of July."
- Missouri L. Haseman (July 26). "This insect has been about normal. It is increasing rapidly, and where no treatment had been applied entire plantings have been destroyed."

ONION

ONION THRIPS (Thrips tabaci Lind.)

- Massachusetts A. I. Bourne (August 21). "The onion thrips has appeared much later this season than is usually the case. Have not been as abundant as we usually find them, although here and there they are doing considerable injury. They were late in appearing owing doubtless to the unusual rainfall during June which held them in check. However, the same weather conditions interfered with cultivation so the plants were held up in their development to a considerable extent."

SWEET POTATO

SWEET-POTATO WHITE FLY (Bemisia inconspicua Quaint.)

- Idaho Jeff Chaffin (August 10). "This time last year the white fly was causing serious damage to sweet potatoes all over the State. There are very few this year; in fact, you have to search to find any."

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SOUTHERN FIELD-CROP INSECTS

COTTON

.. BOLL WEEVIL (Anthonomus grandis Boh.)

North
Carolina

B.R.Coad (August 15). "The boll weevil was reported from 6 counties. The infestation seems to be rising and the injury increasing rapidly in Anson and Scotland Counties. Heavy infestations are also reported from sections of Union County."

South
Carolina

B.R.Coad (August 15). "Boll weevil reports have been received from 9 counties. Heavy infestations in all of these counties but one."

Georgia

B.R.Coad (August 15). "Boll weevil reports have been received from 24 counties, covering practically the entire State. Of these, 17 counties report heavy infestations, one county an increasing infestation, and the remaining counties slight to moderate."

Florida

B.R.Coad (August 15). "A single report has been received from this State where indicated migration is reported from Madison County."

Tennessee

B.R.Coad (August 15). "Boll weevil reports were received from 13 counties in this State. Of these, 6 report heavy infestations, all in the southern half of the State extending from Fayette County near the western border to McMinn near the eastern border. The remaining counties report slight infestations."

Arkansas

B.R.Coad (August 15). "From this State we have received reports from 33 counties covering practically the entire cotton-growing region. Twelve counties report heavy infestation, these counties covering the southern and central parts of the State."

Oklahoma

B.R.Coad (August 15). "Reports have been received from 7 counties in this State, 2 of which in the east-central part report heavy infestation."

Alabama

B.R.Coad (August 15). "We have received boll weevil reports from 30 counties covering practically the entire State. Of these, 15 report heavy infestations. The heavily infested counties are in the northern and eastern half of the State."

Louisiana

B.R.Coad (August 15). "Reports on the boll weevil situation have been received from 14 counties. Of these, 5 report heavy infestations, all being in the northern third of the State, with the exception of Saint Landry Parish."

1. The first part of the report deals with the general situation of the country and the progress of the work during the year. It also mentions the results of the various expeditions and the discovery of new species.

2. The second part of the report describes the various expeditions and the results of the various expeditions. It also mentions the discovery of new species and the progress of the work during the year.

3. The third part of the report describes the various expeditions and the results of the various expeditions. It also mentions the discovery of new species and the progress of the work during the year.

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5. The fifth part of the report describes the various expeditions and the results of the various expeditions. It also mentions the discovery of new species and the progress of the work during the year.

Mississippi

B.R.Coad (August 15). "Boll weevil reports have been received from 57 counties in this State, 36 of which, covering practically the entire cotton-growing area, report heavy infestations."

R.W.Harned (August 17). "The boll weevil is now abundant in all parts of the State. In most places where calcium arsenate had not been used probably 90 per cent of the squares were punctured. A few reports were received where for one reason or another boll weevils have not become abundant; in most cases these were probably isolated fields. A fairly good crop of cotton is already promised from the number of maturing bolls."

Texas

M.C.Tanquary (August 14). "The boll weevil infestation had been much lighter over a greater portion of Texas than was anticipated from the unusually large percentage of weevils which successfully emerged from hibernation. This is due in part to the continued hot dry weather throughout the summer and perhaps in part to the very general light planting of cotton this past spring."

B.R.Coad (August 15). "Boll weevil reports have been received from 12 counties in this State, all in the eastern third of the State. Six counties report heavy infestations extending from Fannin County on the northern border to Karnes County near the southern border."

COTTON WORM (Alabama argillacea Hubbs.)

Alabama

W.E.Hinds (August 14). "The cotton leafworm was reported from the following counties: Alabama, Lowndes, Autauga, Lawrence, Talladega, Marshall, Etowah, Cullman, Franklin, Madison, Lauderdale, Walker, Morgan, and Cherokee. The infestation is light, but widespread. Pupation is now beginning and we anticipate widespread stripping by the end of the month or the first week in September."

Arkansas

G.G.Becker (August 15). "We received matured worms and even pupae from Desha County as early as July 26, and only 10 days later received word from Faulkner County that an outbreak was occurring there. I have just returned from Texas and found the worms serious in many parts of the State."

B.R.Coad (August 15). "The cotton leafworm has been reported from 17 counties. First-generation larvae were first reported from Desha County July 31; by August 12, reports of adults were received from Washington County; and by August 15, from Mississippi County."

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Mississippi

R.W.Harned (August 8). "We have received cotton worms from Adams, Jefferson, Claiborne, Warren, Marshall, Benton, Hines, Yazoo, Sharkey, Issaquena, Madison, N. Bolivar, Montgomery, and Chickasaw Counties. They have appeared in large enough numbers to completely defoliate cotton fields in Madison, Hines, Claiborne, Adams, Leflore, and other counties. (August 17) The cotton worm has probably now reached every part of Mississippi during the first ten days of August. Specimens were received from about 25 counties. These insects were first reported during the last week of July. No complaints have reached this office from these counties that compose approximately the southeastern quarter of Mississippi. No defoliation has been reported from the northern counties, whereas from the western half of the State certain fields have been almost completely defoliated."

B.R.Coad (August 15). "Reports of the cotton leafworm were received from 11 counties. First-generation larvae were reported from Hines and Wilkinson Counties on July 21; by August 5, reports were received from as far north as Leflore, Bolivar, and Chickasaw Counties."

Texas

M.C.Tanquary (August 14). "Cotton leafworm infestation very heavy and unusually early, doing very serious injury in many places, especially throughout the Brazos Valley. Many farmers are dusting their cotton, using calcium arsenate, lead arsenate, or Paris Green. The available supply of arsenicals for dusting purposes seems to be practically exhausted."

B.R.Coad (August 15). "The cotton leafworm was reported from 9 counties. First-generation larvae were observed as far north as Smith and Natchitoches Counties by July 27, and as far north as Dallas County by July 31."

Oklahoma

B.R.Coad (August 15). "Reports of the cotton leafworm were received from Garvin and Carter Counties on August 15."

Louisiana

T.H.Jones (July 31). "Information received during the last day or two indicated that the cotton caterpillar is showing up in injurious numbers in parts of northern Louisiana. (August 15) Since my last report, the outbreak of the cotton caterpillar has easily been the outstanding entomological feature of the month. Reports of damage in the northern part of the State began to reach us during the last few days in July and since then have been received from practically every section where cotton is grown. Few pupae were found in Franklin Parish on August 1. Dusting of cotton for the control of the pest has been general, Paris Green being the arsenical most commonly used, but the work has been delayed and interfered with by not having a stock of arsenical poisons readily available and by rain in many sections. Prices charged for Paris green have varied greatly; the lowest price was 29 cent per pound in cases F.O.B. Atlanta or Dallas, and I am informed that as high as 75 cents per pound has been paid."

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B.R.Coad (August 15). "The cotton leafworm has been reported from 15 counties. First-generation larvae were observed in the northernmost part of the State from Claiborne County on July 26; by August 14th moths of the second generation were collected at Tallulah; and by August 18, second-generation larvae were found at this place."

COTTON APHID (Aphis gossypii Glov.)

th
olina B.R.Coad (July 15). "The cotton aphid is reported as abundant on this date in the vicinity of Hartsville and Charleston."

gia B.R.Coad (July 15). "The cotton aphid is reported as abundant on this date in the vicinity of Cordele and Forsyth."

ida Jeff Chaffin (July 20). "This insect is reported as being quite numerous at the present time in Madison County."

ansas B.R.Coad (July 15). "A light infestation of the cotton aphid is reported at Cummins."

issippi B.R.Coad (July 15). "A light infestation is reported at Magnolia and Itta Bena. (August 17) The cotton aphid has been received from several points and is apparently causing a small amount of damage to cotton."

usiana B.R.Coad (July 15). "The cotton aphid is reported as abundant in the vicinity of Elm Grove."

COTTON RED SPIDER (Tetranychus telarius L.)

ida Jeff Chaffin (July 20). "This pest is reported at the present time as numerous in Madison County."

souri A.C.Burrill (July 11). "This pest is now present in large numbers on elm, maple, sycamore, etc. The progress of mites on trees is used as an index by the county agent of Pemiscot County as to the possible infestation of cotton later in the season."

COTTON SQUARE-BORER (Uranotes melinus Huebn.)

ssissippi R.W.Harned (August 17). "The cotton square-borer has been received from several correspondents. In every case it has been causing damage to cotton."

BOLLWORM (Heliothis obsoleta Fab.)

ida G.D.Smith (July 20). "This insect is unusually active this year in Madison County."

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Mississippi

R.W. Harned (August 17). "The bollworm has been reported from Holly Springs as damaging about 4 per cent of the cotton. This estimate was made by counting squares. No damage was noticed on the bolls; this was young cotton and but few bolls were present. Some complaints in regard to the bollworm have been received from every part of the State. Several of the larvae thought to be the bollworm have been reared and determined as Heliothis virescens Fab.

SOUTHERN GREEN PLANT-FUG (Nezara viridula L.)

Florida

G.D. Smith (August 1). "This insect has done quite a bit of damage to cotton all over western Florida during the past month."

CONCHUELA (Pentatoma ligata Say)

Texas

M.C. Tanquary (August 17). "This insect has been reported as doing serious damage to cotton and alfalfa in the irrigated regions of El Paso and Pecos Counties."

CORN-SILK BEETLE (Luperodes varicornis LeC.)

Texas

M.C. Tanquary (August 14). "This insect has been reported as working on cotton in this State."

The first part of the paper is devoted to a general
 discussion of the problem. It is shown that the
 problem is of great importance in the theory of
 functions of a complex variable. The second part
 contains a detailed proof of the theorem. The third
 part is devoted to some applications of the theorem.
 The fourth part contains some remarks and a list of
 references.

FOREST AND SHADE - TREE INSECTS

MISCELLANEOUS SPECIES

SEVENTEEN-YEAR CICADA (Tibicen septendecim L.)

Florida

Jeff Chaffin (July 29). "Reports from inspectors and county agents indicate that Brood XVI of the periodical cicada is present all over north and west Florida at the present time. I have received specimens from as far west as Bay County and Panama City, and collected a few specimens here at Gainesville yesterday. The brood seems less numerous than usual and just appeared within the last ten days or two weeks."

GIPSY MOTH (Porthetria dispar L.)

Massachusetts

A. I. Bourne (August 21). "I have a report from the northern part of Worcester County that the gipsy moths are at the present time beginning their egg laying; but, apparently, the eggs are in much smaller numbers than last year."

SATIN MOTH (Stilpnotia salicis L.)

Washington

A. L. Melander (August 26). "The satin moth has attained apparently a permanent foothold in western Washington. It was reported by William E. Longley, a specialist on Lepidoptera, as so abundant in South Bellingham that the crushed caterpillars have made the sidewalks slippery. Poplar trees have been stripped of foliage, the larvae pupating on bare twigs among hedges and projections of near-by houses. Mr. Longley also reports the occurrence of tachinid parasites."

This insect, against which the Federal Horticultural Board established a quarantine in New England this year, is also reported by our State district horticultural inspector, Mr. C. O. Weiss, as occurring at Plaine on the international border. It also occurs at New Westminster, B. C., according to information from across the border."

FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)

Idaho

Claude Wakeland (July 31). "This insect is very much more abundant than usual in Boundary, Bonner, and parts of Kootenai and Bennewah Counties, the most serious infestation being on poplar, birch, willow, choke cherry, wild rose, hawthorn, and apple, also to some extent on boxelder. The moths had all emerged by the last of July and countless egg masses are on all the above mentioned trees. The most serious infestation seems to be along river banks and lowlands. Two undetermined hymenopterous and one dipterous parasite have been reared from pupa cases, indicating a parasitism of about 25 per cent."

BAGWORM (*Thyridopteryx ephemeraeformis* Haw.)

- York C. R. Crosby (August 4). "This insect was observed attacking horse chestnut, birch, evergreen, and sassafras on Staten Island, and specimens were sent in to the office on July 29 from Nassau County on Long Island."
- Jersey R. B. Locke (August 11). "This insect has been reported as damaging apples at Dayton, and cherries at Lakehurst."
- Indiana J. J. Davis (August 17). "We are continuing to receive numerous reports on the bagworm. These all come from southern Indiana and have been most numerous the last of July and the first of August. The host plants include spruce, arborvitae, shade trees, and shrubs."
- Mass Geo. A. Dean (August 16). "In the southeastern part of the State the bagworm is rather common on red cedar, arborvitae, maple, boxelder, and elm. In several localities they are completely defoliating the cedar and arborvitae."

PSOCIDS

- Louisiana T. H. Jones (August 15). "During the past few days reports have been received from St. Tammany, East Baton Rouge, St. Landry, and Pointe Coupee Parishes as to the appearance of webbing on the trunks and branches of trees. One correspondent describes this condition as follows: 'The trunks and branches of these trees are entirely encased and appear as though varnished with a silvery polish.' The web resembles spider-web and is due to the presence of a psocid, which we have not yet determined."

CATALPA

CATALPA SPHINX (*Ceratonia catalpae* Boisd.)

- Missouri A. C. Burrill (July 11). "About 50 per cent of the foliage has been removed from catalpa trees in parts of Pemiscot County. This seems to be a bottom land epidemic spreading over several counties."

ELM

ELM BORER (*Saperda tridentata* Oliv.)

- Nebraska M. H. Swenk (August 1). "Normal injuries by the elm borer occurred during the period covered by this report (July 15 to August 1)."
- Mass Geo. A. Dean (August 16). "Over the entire eastern half of the State the common elm borer is seriously injuring the elm shade trees. In a large number of towns hundreds of elms are dying."

LOCUST

LOCUST LEAF-MINER (*Chalepus dorsalis* Thunb.)

- Mississippi R. W. Harned (August 17). "The locust leaf-miner has done considerable damage in several counties in the southwestern section of the State."

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1. The first part of the paper is devoted to a review of the literature on the topic. It starts with a general overview of the field, followed by a more detailed discussion of the specific issues at hand. The author then presents his own findings, which are based on a series of experiments. Finally, he concludes with some thoughts on the implications of his work and suggests directions for future research.

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OAK

OAK PRUNER (Elephidion villosa Fab.)

Edith M. Patch (August 3). "Work of the oak pruner and Oberia binaculata Oliv. still continues to be sent in from Portland to Bangor."

TWO-LINED PROMINENT (Seriodonta bilineata Comst.)

Franklin Sherman (July 18). "This insect is now epidemic on oaks in Wilson, Wake, Durham, Davidson, Granville, Rowan, Stanly, Montgomery, and Moore Counties, apparently covering the whole central area of the State."

PINE

PINE BUTTERFLY (Neophasia mexapia Feld.)

D. E. Jones (July 31). "The worst outbreak ever known in Idaho is under way in the Fayette Lakes region. The larvae have completely defoliated about 14,000 acres of yellow pine. Forest rangers estimate that the number of adults and pupae averages from 500 to 5,000 per tree, depending on the size of the trees. Pupal cases are so numerous that it is difficult to touch the tree trunks between them. Grass, weeds, fence posts, etc., are covered with the pupal cases from which the adults have not yet emerged."

(3)

The following information was obtained from the records of the Department of the Interior, Bureau of Land Management, regarding the land owned by the United States in the State of California, as of January 1, 1940:

Public Lands: 1,000,000 acres

Private Lands: 1,000,000 acres

Total Lands: 2,000,000 acres

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Public Lands: 1,000,000 acres

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Total Lands: 2,000,000 acres

GREENHOUSE AND ORNAMENTAL

PLANT INSECTS

ASTERS

A CURCULIONID (Pictipes sp.)

C. S. Weigel (July 30). "This insect has been reported from Iowa City as seriously damaging asters."

MARGUERITE FLY (Agromyza maculosa Mall.)

Mississippi R. W. Harned (July 20). "For the first time we have received several complaints in regard to what we take to be marguerite fly injuring asters."

FERN

SOUTHERN FERN CUTWORM (Callopistria floridensis Guen.)

Mississippi R. W. Harned (August 17). "The southern fern cutworm has been seriously damaging ferns at Lumberton."

CANNA

CANNA LEAF-ROLLER (Calpodex ethlius Cram.)

Mississippi R. W. Harned (August 17). "Numerous reports have been received in regard to the injuries caused to cannas by leaf-rollers. Specimens have been received at this office from several points in the State of both this insect and the lesser canna leaf-roller (Nymphula cannalis Quaint.). In some cases both insects were present on the same plant."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL FLY (Diarthronomyia hypogaea Loew)

land C. S. Weigel (July 30). "A report has been received that this insect is damaging chrysanthemums at Chevy Chase."

New Jersey C. S. Weigel (July 30). "This insect has been reported as particularly injurious to chrysanthemums at Summit."

A LACE-BUG (Corythucha marmorata Uhl.)

Mississippi R. W. Harned (August 17). "Lace-bugs, probably the above species, have been reported as seriously damaging chrysanthemums in Jefferson and Choctaw Counties."

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COLUMBINE

COLUMBINE LEAF-MINER (Phytomyza aquilegiae Hardy)

Jersey C. S. Weigel (July 30). "This insect was reported as particularly injurious to columbines during July at Summit."

COLUMBINE BORER (Papaipema purpurifascia G. & R.)

York C. S. Weigel (July 30). "This insect was reported from Cohoes as injuring columbines."

IRIS

IRIS BORER (Macronoctua onusta Grote)

ane E. M. Patch (August 5). "For the last three or four seasons we have had reports of the larvae of this insect destroying iris. Material was received today from Augusta, larvae nearly full grown."

iana J. J. Davis (August 17). "Mr. E. B. Williamson, of Bluffton, who is a specialist in growing irises, has reported the iris borer as a very serious pest in his plantings."

ROSE

ROSE SCALE (Aulacaspis rosae Bouche)

Jersey Ralph B. Lett (July 25). "This insect was observed at New Brunswick as seriously infesting rose bushes."

UNICORN PROMINENT (Schizura unicornis S. & A.)

Mississippi R. W. Harned (August 17). "This insect was received from Madison County, where it was reported as injuring roses."

RUSSIAN SUNFLOWER

SUNFLOWER WEEVIL (Rhodobaenus 13-punctatus Ill.)

Missouri A. C. Burrill and A. F. Satterthwait (July 12). "Several hundred acres of a 3,000-acre sunflower plantation in the vicinity of Marston are infested for the first time, in the experience of the manager, with this beetle. In a rapid survey of a 30-acre patch 100 per cent of the stalks were found to be infested. Infestation sometimes results in the wilting of the heads and in other cases so weakens the plant that it is readily blown over. It is impossible as yet to ascertain to what extent the crop will be damaged."

THE HISTORY OF THE

REIGN OF HENRY THE SECOND

BY JOHN GILBERT FROTHINGHAM

IN TWO VOLUMES

LONDON: PUBLISHED BY J. B. LIPPINCOTT, 15, N. W. CORNER OF MARKET STREET, 1854.

Vol. II.

THE REIGN OF HENRY THE SECOND

CONTAINS THE HISTORY OF THE REIGN OF HENRY THE SECOND, FROM THE DEATH OF RICHARD THE FIRST, TO THE DEATH OF HENRY THE SECOND, AND THE REIGN OF RICHARD THE FIRST, FROM THE DEATH OF HENRY THE FIRST, TO THE DEATH OF RICHARD THE FIRST.

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THE REIGN OF HENRY THE SECOND

GROUNDSEL TREE

A. LACE-BUG (Corythucha marmorata Uhler)

ork E. P. Felt. "The tingis reported in the Survey Bulletin, Volume II, No. 5, page 189, has been identified by Mr. Drake as the above species."

MISCELLANEOUS FEEDERS

STALK-BORER (Papaipema nebris Guen., var. nitela Guen.)

C. S. Weigel (July 30). "This borer has been reported from Maryland, Ohio, and New Jersey as doing particularly serious injury to many flowering plants, among which are zinnia, delphinium, and dahlia."

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INSECTS INFESTING HOUSE AND PREMISES

ARGENTINE ANT (Iridomyrmex humilis Mayr)

Mississippi R.W.Harned (August 17). "The Argentine ant is very abundant in 56 towns in the State. Surveys are being made in Aberdeen, Kosciusko, Durant, Terry, Crystal Springs, Hazlehurst, Summit, Woodville, Gulfport, Mississippi City, Biloxi, Bay St. Louis, Laurel, Hattiesburg, Greenwood, Greenville, and Clarksdale."

Pheidole flavens Roger subsp. floridana Emery.

Mississippi R.W.Harned (August 17). "This ant has been taken recently by one of the Plant Board Inspectors at Ocean Springs. This ant, which is common in Tropical America, is liable to become a household pest of importance."

Pheidole megacephala Fab.

Mississippi R.W.Harned (August 18). "During March one of the Plant Board inspectors sent to this office roots of the African daisy, Lonea indora, which were infested with this ant. These plants had been sent to a firm in Columbus, Miss., from Honolulu. Numerous soldiers, queens, workers, and immature stages were present about the roots of the plants. Specimens were determined by Dr. W.M.Wheeler. This Old World ant is now fairly well established in Tropical America and is a potential house pest."

TERMITES (Reticulitermes flavipes Kol.)

Mississippi R.W.Harned (August 17). "Termites, probably this species, have been reported as causing serious damage at several places. At Hazlehurst they were injuring chrysanthemums, apparently starting from pine stakes used as supports for these plants. At New Albany they had seriously weakened the framework of a building. At Starkville they had ruined a carpet."

PSEUDOSCORPIONS

Nebraska M.H.Swenk (August 1). "One Cumming County correspondent complained of an abundance of false scorpions in his barn and haymow."

POWDER-POST BEETLE (Lyctus linearis Goeze)

Indiana J.J.Davis (August 17). "This powder-post beetle was reported on August 7 from North Manchester, where it was boring holes in the sleepers and oak floors of a dwelling house."

INVESTIGATING REPORT

CONFIDENTIAL

TO: DIRECTOR, FBI
FROM: SAC, NEW YORK
SUBJECT: [Illegible]

RE: [Illegible]

On [illegible] at [illegible]
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The [illegible]

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(Enclosure)

Enclosure (in 100). [Illegible]
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Respectfully,
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[Illegible]

[Illegible]

INSECTS ATTACKING MAN AND
DOMESTIC ANIMALS

CATTLE

HORN FLY (Haematobia irritans L.)

Massachusetts E.R. Farrar (August 15). "Horn flies are very much more troublesome than usual in Lincoln County this year."

STABLE FLY (Stomoxys calcitrans L.)

Texas F.C. Bishopp (July 27). "Stable flies were quite annoying in the vicinity of Dallas up to about the latter part of June. During July these flies were of no material consequence as stock pests."

BLACK BLOWFLY (Phormia regina Meig.)

Texas F.C. Bishopp (July 27). "This fly has practically disappeared in Texas. It was extremely numerous during the spring and caused heavy losses among sheep raisers in the western part of the State. Some stated that there were more wool maggots this spring than has been experienced for years."

BLOWFLY (Calliphora vomitoria L.)

Texas F.C. Bishopp (July 27). "There was a marked decrease in the number of blowflies about July 1st. This insect, which has been causing unusual trouble around packing houses during the spring is now of little consequence and trapping operations have been curtailed."

SCREW-WORM (Chrysomya macellaria Fab.)

Texas F.C. Bishopp (July 27). "After about July 10 a screw-worm cases, which had been rather more numerous than normal in southwest Texas, began to subside materially. This is undoubtedly associated with the hot, dry weather which has set in over much of the range country."

POULTRY

FOWL TICK (Argas minatus Koch)

Mississippi R.W. Harned (August 17). "The fowl tick was collected by Mr. E.K. Bynum at Biloxi on August 2. These ticks were very abundant in a poultry house. This is the first authentic record we have of the occurrence of this insect in Mississippi. They were determined by Mr. F.C. Bishopp, of the Bureau of Entomology. So far we have not been able to determine how these ticks reached Mississippi, or how long they have been present."

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(Telephorus sp.)

Indiana J.J. Davis (July 1). "I am sending, under separate cover, specimens found in the crop and gizzards of 10 or 12 week old chicks at Hope, Ind. One of the most prominent poultry breeders in the Central West sent in these crops, advising that the contents caused a violent death among some of his chicks. While there are several insects present, the coleopterous larvae predominate." (This material was submitted to Dr. Adam Boving who determined the larvae as Telephorus sp.)

MAN

Atomus sp.

New York C.R Crosby (July 14). "Specimens of this mite were sent from Levanna with the following communication.: 'I am sending you a sample of a mite that has suddenly been noticed in one of our camps on the Lake Shore. They bite campers unmercifully. We drenched the building with a saponified coal-tar creosote spray today but as the roof and the oak trees and the outside of the building seemed to be infested, we do not know what to do.'"

1900

THE INSECT PEST SURVEY BULLETIN

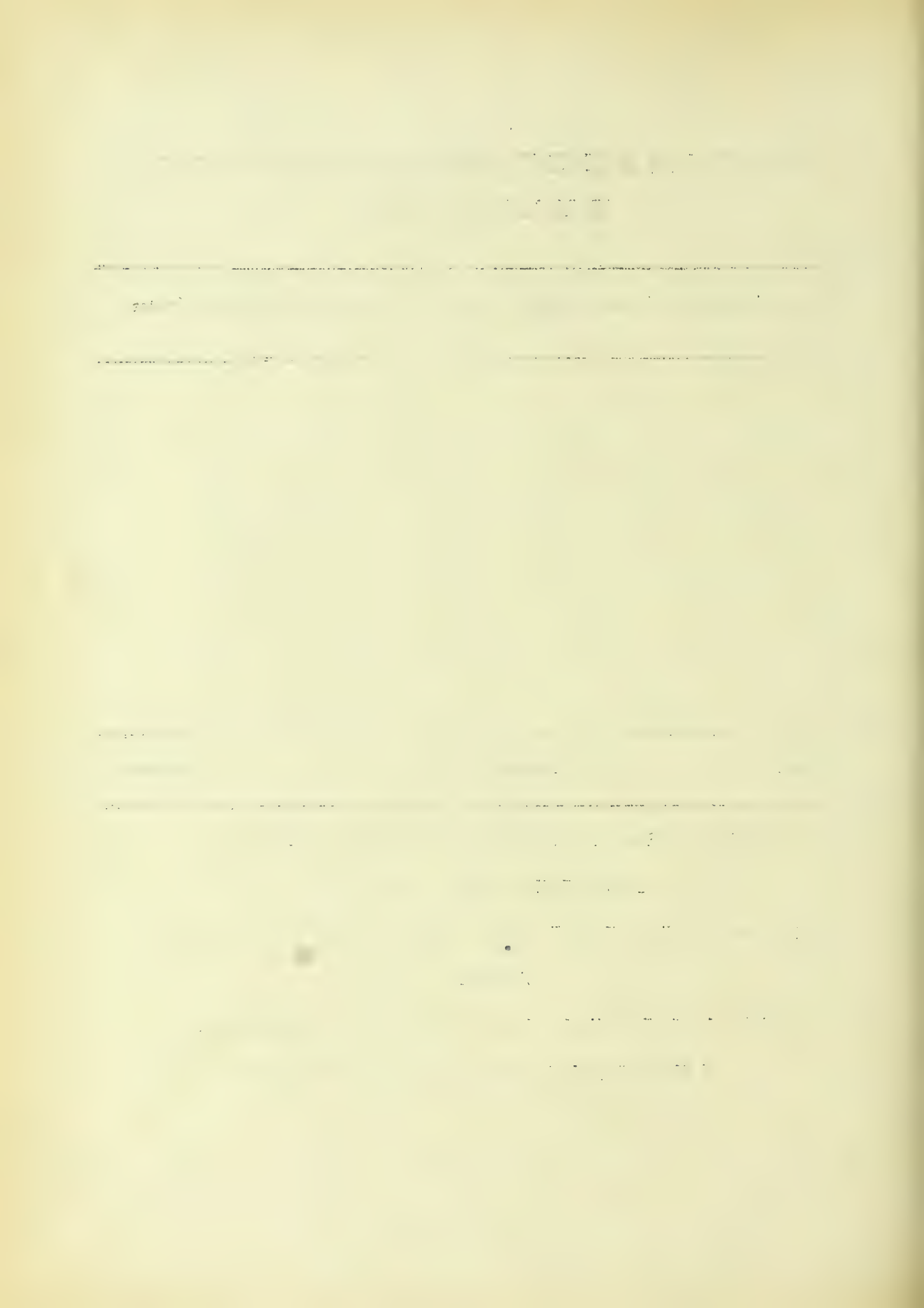
A monthly review of entomological conditions throughout the United States

Volume 2

October 1, 1922

Number 7

**BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING**



OUTSTANDING ENTOMOLOGICAL FEATURES FOR SEPTEMBER, 1922

There is practically no change in the Hessian fly situation since the last report. Observations in Iowa indicate that the heaviest emergence in that State is taking place in the south-central counties. The Bureau of Entomology Survey shows a decided decrease in the percentage infestation in Maryland, Delaware, and southwestern Pennsylvania, while in the Susquehanna Valley of the last State there is a marked increase.

Favorable weather in the east-central States has resulted in a decided increase in the number of chinch bugs of the second generation to reach maturity. In all probability an unusual number of adults will go into hibernation in this region.

The corn earworm was decidedly less serious throughout the northern part of its range than was the case last year.

The true armyworm was not serious over most of its range. In Illinois it was less numerous than has been the case for many years. A few isolated and unimportant outbreaks developed in the west-central States.

The apple and thorn skeletonizer continues to increase in intensity of infestation and in its range in New York and Connecticut.

The shot-hole borer is attracting considerable attention in the middle Atlantic and east-central States, where it is reported as attacking apparently otherwise healthy trees.

The potato leafhopper associated with hopperburn has been very serious in Wisconsin and western New York.

The Mexican bean beetle is consistently spreading northward; six new counties in Tennessee and one in Kentucky are reported infested during this month. Very little spread has been recorded southward from the original Alabama infestation.

The belted cucumber beetle is rapidly becoming a major crop pest in the lower Mississippi Valley.

The boll-weevil situation remains practically as in the last report. Boll damage is now reported as serious in many places throughout the cotton belt.

The bollworm is reported as serious in central Georgia, western Arkansas, and several places in Louisiana.

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The cotton worm continued heavy feeding during the month over the Southern States. During the last week in September a serious outbreak developed in eastern Virginia requiring control measures. By September 12 the adults had reached Urbana,¹ and by September 21, they had reached Bethlehem, N.H.

The fall webworm is unusually abundant over the Atlantic Coast States from Maine to Georgia and Alabama.

The birch leaf-skeletonizer is more seriously numerous than it has been in years in New England, New York, Michigan, and Wisconsin.

CEREAL AND FORAGE - CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

- Pennsylvania P. R. Myers (September 20). "In the Southeastern Pennsylvania area there has been a general decrease from 1.48 per cent at Nazareth to 12.15 per cent at Wernersville, except at Perkaspie where there is recorded an increase of 4.82 per cent. In the Susquehanna Valley area all localities showed an increase which varies from 5.20 per cent at Montoursville to 14.91 per cent at Middleburg."
- Delaware and Maryland P. R. Myers (September 20). "In the Delaware and Eastern Shore of Maryland area there has been a decrease in all localities except at Cambridge, where there has been an increase of 1.09 per cent and at Princess Anne, where there has been an increase of 18.94 per cent."
- Illinois W. P. Flint (September 18). "There is no change in the Hessian fly situation since last month. A few flies are emerging but eggs are very scarce in the central part of the State."
- Iowa F. A. Fenton (September 19). "Three Hessian fly observation stations have been established: No. 1 at Spring Hills, in Warren County; No. 2 at Onawa, in Monona County; and No. 3 at Essex in Page County. Judging from reports sent in from these stations infestation seems to be most severe in the vicinity of Warren and Polk Counties. At the Warren County station the fly has been emerging more abundantly than at either of the other stations and there is a comparatively small percentage of parasitism at this station as compared with a high percentage at the Page and Monona County stations. At this time in 1921 the majority of the wheat was planted in Warren and Polk Counties. Owing to the campaign put on this year, at the present time there are only four fields sown in Warren and one in Polk County."

JOINTWORM (Harmolita tritici Fitch)

- Illinois W. P. Flint (September 18). "Parasites of the jointworm are very abundant. Counts show approximately 50 per cent of the larvae killed in this way. A survey conducted during August showed a spotted infestation ranging from 2 per cent to 46 per cent in the southern part of the State."

CORNCHINCH BUG (Blissus leucopterus Say)

- Indiana J. J. Davis (September 19). "Now that the wheat-sowing period is approaching, farmers are finding plenty of chinch bugs in cornfields and are inquiring as to the advisability of sowing wheat in the infested fields."

Illinois W. P. Flint (September 18). "Weather during August and the first of September was very favorable for the development of the second brood of the chinch bug. Fifty per cent or more of the bugs are now adults and it seems certain that much larger numbers are going into hibernation than was the case in the fall of 1921. Seventy-five per cent of the Counties in Illinois are now infested. Heaviest infestation occurs in the west-central part of the State."

Nebraska M. H. Swenk (August, 1922). "The chinch bug has not proved as injurious in northeastern Nebraska as had been expected."

Kansas J. W. McColloch (August 23). "The chinch bug occurred in damaging numbers throughout the eastern half of the State. Some bugs were found as far west as Thomas County."

CORN EARWORM (Heliothis obsoleta Fab.)

Connecticut B. G. Southwick (September 19). "Rather numerous in Hartford County, though not as bad as last year. A few larvae were observed in Hamden and New Haven by Dr. Britton and Mr. Zappe."

New York H. C. D'Dell. "The corn earworm has been commonly observed in the plantings of sweet corn in Nassau County since the middle of August."

E. P. Felt (September 23). "The corn earworm was reported from several localities in the lower Hudson Valley and on Long Island. The damage in 1921, however, was much more severe than this year."

Delaware C. O. Houghton (September 11). "This species is much less abundant than last year in sweet corn about Newark, yet there is considerable infestation in some cases."

Illinois W. P. Flint (September 18). "This insect has been much scarcer than at any time during the past ten years. The infestation in sweet corn in central Illinois was carefully followed throughout the season and never ran over 3 or 3½ per cent, averaging about 2 per cent. Moths are now appearing in greater numbers but too late to cause any damage to field corn."

Wisconsin S. B. Fracker (September 15). "The outbreak of 1921 was not repeated this year. A single report of a few early-season individuals was received from Oshkosh."

Utah I. M. Hawley (September 2). "This insect has become a serious pest wherever corn is grown. As high as 50 per cent of the ears are infested in some places."

ARMYWORM (Cirphis unipuncta Haw.)

Virginia Correction: The note in Volume 2, No. 4, page 111, from this State refers to Chloridea obsoleta Fab."

- Indiana J. J. Davis (September 19). "On September 16 the county agent at Rockford in the southeastern corner of the State sent specimens of the common armyworm with the information that they were abundant and damaging corn in one locality."
- Illinois W. P. Flint (September 18). "Bait traps have been run for several seasons and this year have given the smallest catch of adults of this species."
- Wisconsin S. B. Fracker. "A single outbreak of this insect has come to our notice this year, this being in St. Croix County, but caused no serious injury."
- Nebraska M. H. Swenk (September 1). "The true armyworm appeared in the fields of millet and corn during the second week of August and did considerable injury in places. In Antelope County, in particular, there were several armies moving and destroying crops at that time."

WHEAT-HEAD ARMYWORM (Neleucania albilinea Huebn.)

- Nebraska M. H. Swenk (September 1). "In Kearney County, at the same time that the true armyworm was active in the second week in August, some of the oat fields were overrun with the wheat-head armyworm which ate the heads of the grain."

WHITE GRUBS (Phyllophaga spp.)

- Illinois W. P. Flint (September 18). "A number of fields of corn in east-central Illinois have been quite severely damaged by white grubs. In most of these fields areas of two or three acres will be injured but the rest of the field very lightly infested. Most of these fields were in corn in 1921, the grubs being now in their second year of development."

A FLOWER-BEETLE (Euphoria sepulchralis Fab.)

- Indiana J. J. Davis (September 19). "This flower-beetle was reported from Evansville on September 12 as doing considerable damage to corn by feeding on the maturing kernels."

ALFALFA

ALFALFA WEEVIL (Phytonomus posticus Gyll.)

- California (California Weekly News Letter, August 26.). "The alfalfa weevil has again been intercepted in automobile camping equipment, this time at Truckee. The weevil was taken on August 26 on a machine from Nevada."

COWPEA

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

- Georgia O. I. Snapp (August 23). "Complaints are reaching the laboratory from various sections of central Georgia relative to damage to cowpeas by this insect, which does considerable damage each season."

F. H. Chittenden (September 8). "Mr. H. B. Lancaster reports that the cowpea-pod curculio was injurious to mung beans at Thomasville during August."

GENERAL FEEDERS

GRASSHOPPERS (Acridiidae)

Wisconsin

S. B. Fracker (August 15). "The infestation in the northeastern counties, extending from Door County to Iron County and westward to Price and Lincoln Counties, has been fairly well controlled by general distribution of poisoned-bran through town-board organizations. Egg laying was quite general after July 15."

Nebraska

M. H. Swenk (September 1). "Grasshoppers continued to be numerous and injurious in Scotts Bluff, Morrill, Sheridan, and Sioux Counties and the local outbreak in Washington County, which was investigated carefully during the third week in August, proved to involve a considerable reduction in the alfalfa yield. The species generally concerned in northwestern Nebraska is Melanoplus bivittatus Say, while Washington County infestation is almost entirely M. differentialis Thos., with but comparatively few M. femur-rubrum DeG. Grasshoppers were reported as injurious and numerous in Garfield County also during this month."

Kansas

J. W. McColloch (August 28). "Melanoplus differentialis Thos. and M. bivittatus Say are the predominating species in an outbreak in the northwestern part of the State covering Thomas, Sheridan, Graham, Logan, Gobe, and Trego Counties. M. atlanis Riley is beginning to appear."

1. The first part of the paper is devoted to a review of the literature on the effects of the 1997-1998 Asian financial crisis on the economies of the Asian countries. The second part of the paper is devoted to a review of the literature on the effects of the 1997-1998 Asian financial crisis on the economies of the Asian countries. The third part of the paper is devoted to a review of the literature on the effects of the 1997-1998 Asian financial crisis on the economies of the Asian countries.

$\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{x}} \right) = \frac{\partial L}{\partial x}$

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1. 1990年12月，在《中国环境报》上刊登了“中国环境报”的创刊号，这是中国环境报创刊以来的第一份报纸。

1. The first of these is the fact that the system is not a simple one. It is a complex system, and it is not clear what the purpose of the system is. It is not clear what the system is for, and it is not clear what the system is doing. It is not clear what the system is for, and it is not clear what the system is doing.

FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeG.)

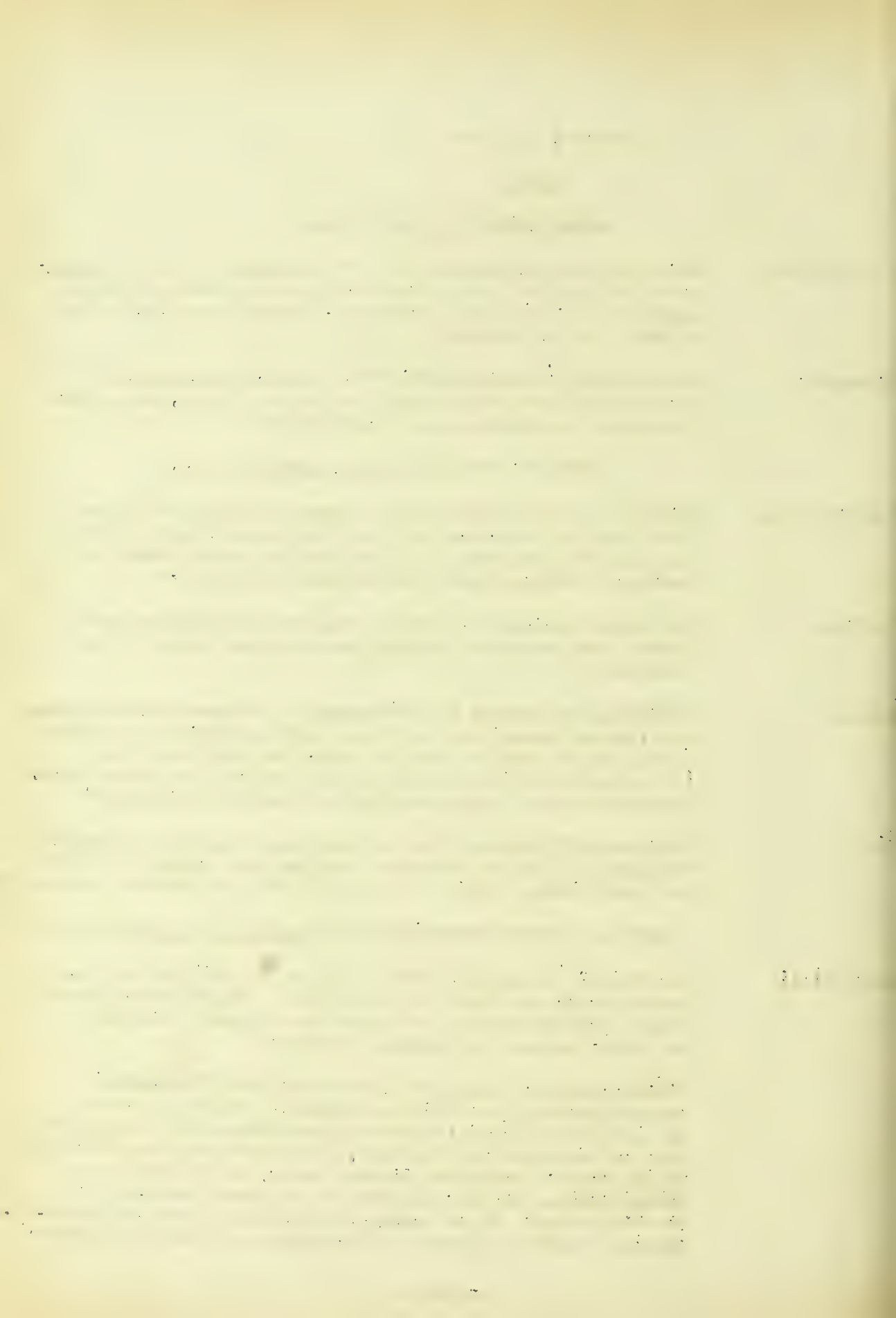
- Massachusetts R.A.Van Meter (September 13). "This insect is now abundant over the greater part of the State, particularly on young apple trees. It became numerous, however, too late to do a great deal of damage."
- Wisconsin S.B.Fracker (September 15). "The early-season outbreak disappeared over the greater part of the State, but aphids persisted to midsummer near Sturgeon Bay."

CODLING MOTH (Carpocapsa pomonella L.)

- Massachusetts R.A.Van Meter (September 13). "Complaints of side injury have been received from northern Middlesex County. There was a heavy emergence of adults for the second brood but many side holes appeared before this emergence."
- New York G.E.Smith (August 14). "The second brood of codling moth larvae were observed entering the fruit on August 14 at Waterport."
- Indiana J.J.Davis (September 19). "Evidently the warm weather during the last of August and the first of September was favorable to the third brood of codling moth. At the State fair (September 11-15) many young worms, apparently hatched after shipment to the fair, were found in the exhibit fruit."
- Utah I.M.Hawley (September 2). "In some small orchards in Summit, Wasatch, and Morgan Counties, five or more worms were found in every fruit. These orchards had not been sprayed, however."

APPLE AND THORN SKELETONIZER (Hemierophila pariana Clerck)

- Connecticut B.A.Porter (August 26). "This species is still on the increase in the vicinity of Wallingford. Third-brood larvae began spinning cocoons on August 23. Second-brood moths are still present in enormous numbers."
- W.E.Britton and assistants (September 21). "Commercial sprayed orchards are not much injured. Unsprayed trees are now brown. This insect was less destructive than last year in Greenwich and Stamford, where the pest has occurred in the State. According to Mr. Manter, it is not serious around Storrs, nor has it been noted around Rockville by Mr. E.E.Tucker. It is doing considerable damage in Litchfield County, Fairfield County, and Windham and Hartford Counties."



New York E.P.Felt (September 23). "There has been a very marked spread from the infested area near New York City northward of this insect during the summer and it has now become well established in southern Albany and Remselaer Counties. The most serious injury has developed in unsprayed orchards, especially upon the younger trees. These showed a complete browning of the foliage. Moths were emerging in large numbers September 22."

YELLOW-NECKED CATERPILLAR (Datana ministra Drury)

New York E.P.Felt (September 23). "The yellow-necked apple-tree worm has been moderately abundant in the eastern part of the State."

Nebraska M.H.Swenk (August). "In Seward County during the third week in August the yellow-necked apple caterpillar was reported defoliating apple trees."

APPLE MAGGOT (Rhagoletis pomonella Walsh)

Connecticut B.A.Porter (August 26). "In some orchards about Wallingford where this pest has been serious during the past few years it now seems to be rather scarce, but in other orchards serious damage is being done."

APPLE RED BUG (Heterocordylus malinus Reut.)

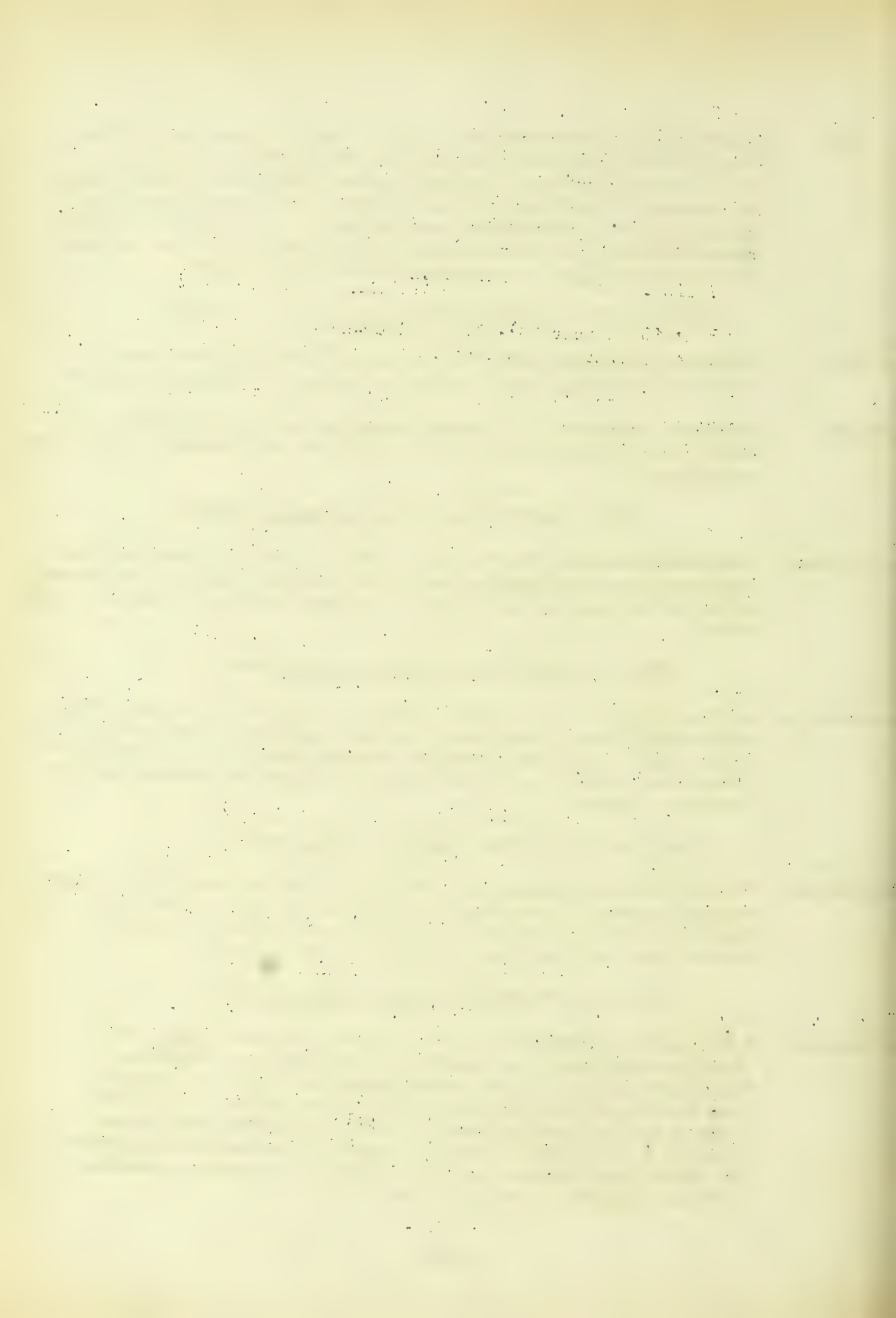
Massachusetts R.A.Van Meter (September 19). "This insect has been very serious in Plymouth County this year. In some orchards fully half of the apples were ruined for market by feeding punctures. This is the first time I have found this insect in injurious numbers east of Worcester County."

FALSE APPLE RED BUG (Lygidea mendax Reut.)

Connecticut F.A.Bartlett (September 19). "We have had so much trouble with red-bug injury as this year, possibly owing to the fact that there is a limited number of apples in this part of Fairfield County (Stamford) and practically all are knurled."

TARNISHED PLANT-BUG (Lygus pratensis L.)

Washington E.J.Newcomer (September 8). "This insect is very abundant in alfalfa cover crops in Wenatchee Valley orchards. Wherever the loaded limbs of apple droop enough to allow the fruit to hang in the alfalfa the bugs attack the fruit. The fruit becomes covered with excreta, and the punctures cause green spots to develop which give the apple a water-cored appearance. The fruit also becomes somewhat deformed. Injury is confined to fruit hanging in the alfalfa."



BUFFALO TREEHOPPER (Ceresa bubalus Fab.)

Utah I.M.Hawley (September 2). "Young orchards set out in alfalfa fields in Utah County in many cases have been entirely killed out. These were usually where weeds were allowed to grow about the trees."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Wisconsin S.B.Fracker. "New outbreaks have been discovered this year at Sheboygan and Rochester. This insect is unusually virulent where it is well established in Racine and Kenosha Counties."

EUROPEAN RED MITE (Paratetranychus pilosus Can. & Fanz.)

Massachusetts R.A.Van Meter (September 13). "Red spiders of some kind are on the increase all over the State. They are very numerous on apple leaves and are also found on plum, elm, and oak."

Utah I.M.Hawley (September 2). "In some places in Utah and Davis Counties the leaves are turning brown and dropping."

Washington E.J.Newcomer (August 5). "Both this species and Tetranychus telarius L. are very severe on all kinds of deciduous fruits in the Yakima and Walla Walla Valleys. This is probably due to the very hot and dry summer which we have had. P. pilosus is the most numerous on apple and pears, while T. telarius is worse on other fruits and on berries as well as truck crops. Prunes in the Walla Walla district are reported as defoliated."

PEAR

QUINCE CURCULIO (Conotrachelus crataegi Walsh)

New York E.B.Shear (August 19). "Some pear orchards in Ulster County show a very high percentage of injury due to this pest. In one case the injury ran to 42 per cent of the fruit. Seckels and Bartletts have suffered most."

FLAT-HEADED APPLE-TREE BORER (Chrysobothris femorata Oliv.)

Washington E.J.Newcomer (August 12). "In an 80-acre orchards planted this year in Yakima Valley 5 per cent of the trees were killed by this insect."

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Washington E.J.Newcomer (August 7). "A severe infestation of this scale was found on a small block of Winter Nelis pear trees, the leaves being covered with honeydew. An application of nicotine

THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. It begins with the first settlers, who came to the New World in search of a better life. They found a land of opportunity, but also a land of challenge. The early years were marked by conflict and struggle, as the settlers fought to establish their own communities and defend their rights. Over time, the United States grew from a small colony into a powerful nation. It was a process of continuous development, shaped by the actions of many individuals and the forces of history. The story of the United States is a testament to the power of the human spirit and the ability of a people to overcome adversity and build a better future.

The early years of the United States were marked by conflict and struggle. The settlers fought to establish their own communities and defend their rights. They faced many challenges, including disease, famine, and war. Despite these hardships, they persevered and built a nation that would become a model for the world. The story of the United States is a testament to the power of the human spirit and the ability of a people to overcome adversity and build a better future.

The United States has a long and rich history, filled with many great achievements and challenges. It is a story of growth and change, of a people who have overcome many hardships and built a nation that is a model for the world. The story of the United States is a testament to the power of the human spirit and the ability of a people to overcome adversity and build a better future.

sulphate 1-1,000 and soap appears to have killed a large percentage of the young. An interesting feature of this infestation is that Bartlett pear trees adjoining the Winter Nelia: have no adults and only a light scattering of young on them, the scale evidently preferring the Winter Nelia: variety."

PEACH

PEACH BORER (Aegeria exitiosa Say)

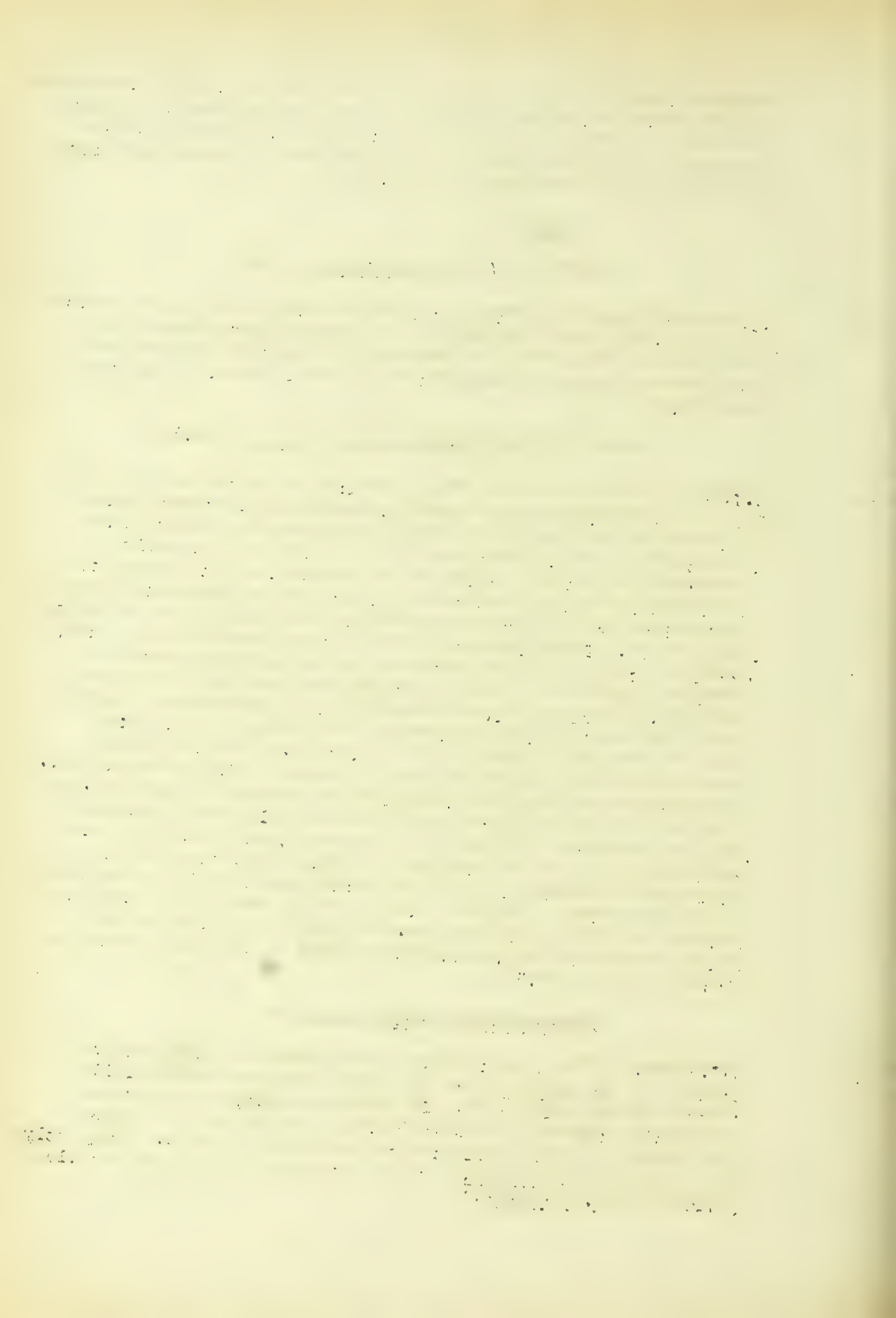
Georgia O.I.Snapp (August 7). "At least 95 per cent of the peach growers in the peach belt of Georgia will use para-dichlorobenzene for this insect. There will be between three hundred thousand and four hundred thousand pounds of this material used in this State this year."

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia O.I.Snapp (September 11). "The curculio damage to peached in the Cornelia or northeastern Georgia district was greater than in central Georgia this year. The infestation was heavier there than it has been for the past several years and is readily accounted for by the failure of the growers in that section to use the full amount of arsenate of lead in the important last application for the second generation, and also to the prevalent rainy season. This district is not in the peach belt of central Georgia. At Fort Valley adults of the second generation were emerging during the last few days of July and the first week in August. Jarring of orchards during the first week in August gave less than 1 beetle per tree. The jarrings a year ago gave an average of over 5 beetles per tree. This is largely due to effective control measures practised during the past year. Third-generation eggs were taken on the morning of August 17. This is perhaps the first record of a partial third generation in this latitude. On August 22 larvae of this generation were noted in the insectary entering the fruit; on September 11, a full-grown curculio larva of the third generation left the fruit in the insectary. This larva immediately took to the soil and started to prepare for pupation. A number of adults of the third generation will in all probability be bred out before the close of the season."

Conotrachelus anaglypticus Say

Georgia O.I.Snapp. "This insect whose life history is very similar to that of C. nenuphar has been bred from peaches that fell to the ground during June. In all probability this species frequently attacks peaches in Georgia and all of the damage heretofore has been attributed to the latter species. Frequently the adults of anaglypticus have been taken from the frames while jarring for C. nenuphar."



SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

- Pennsylvania S. W. Frost (September 15). "The fruit-tree barkbeetle is abundant in some orchards and has been found on living peach trees. On September 6, adults were issuing in great abundance from the limbs of peach trees."
- Georgia O. I. Snapp (September 12). "This insect is doing considerable damage and is numerous in peach orchards, where the trees have become unhealthy from severe San Jose scale infestation. The San Jose scale is on the increase in central Georgia peach orchards, which accounts for a greater abundance of the barkbeetle."
- Indiana J. J. Davis (September 15). "The shot-hole borer continues to be the subject of frequent inquiries."
- Illinois W. P. Flint (September 13). "Damage by this insect has been quite general and in some cases the trees attacked have apparently been in good condition, but have been somewhat weakened by prolonged drought. Spring applications of nitrate of soda have saved many trees in which the injury was not too great."

Calonotus reticulatus Fab. and C. terminale Say

- Nebraska M. H. Swenk. "During the last week in August an unusual report was received from Franklin County to the effect that these lampyrid beetles were destroying peaches by eating into the fruit just as they were beginning to turn."

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- Massachusetts R. A. Van Meter (September 13). "In the Hill sections of the State, especially, this insect is very serious on apples. It is worse than the codling moth."
- Wisconsin S. B. Fracker (September 15). "This insect is unusually abundant in the southern counties this season. It is also extremely difficult to control."

PECAN

FALL WEBWORM (Hyphantria cunea Drury)

- Georgia O. I. Snapp (September 12). "The fall webworm is much more abundant than normally in central Georgia. It is attacking pecans, persimmons, wild cherry and sassafras, and several nests have been found on peach with the larvae feeding on peach foliage."

Mississippi T.H. Jones (September 11). "Although this insect has been sent in from Natchitoches, there appears to have been no real outbreak of this pest this year in any portion of this State."

Lachnus sp.

Georgia O.I. Snapp (September 5). "Heavy infestations of lachnus were found on pecan trees in Fort Valley. Spraying with contact insecticides had to be resorted to in several cases to prevent serious injury of the trees."

CITRUS AND SUBTROPICAL FRUITS

CITRUS WHITE FLY (Dialeurodes citri Ashm.)

Mississippi T.H. Jones (September 15). "For about a month the adults have been noticeably abundant at Baton Rouge during the evenings, especially about chinaberry trees and privet. On the evening of September 2, they were noted to be especially abundant in the City of Lafayette."

BANANA

BANANA ROOT-BORER (Cosmopolites sordidus Germ.)

Porto Rico G.N. Wolcott (September 2). "Two new localities from which material infested by the banana root-borer has been sent in by the agricultural agents are Barros and Comerio. The previous known range of this pest was between Corozal, Vega Baja, and Vega Alto (Barrio Mavillo and Maricao) Guaynabo, Rio Piedras, and Trujillo Alto, all of which localities have been ascertained since December 1, 1921, up to which time this pest was not known to be present in Porto Rico."

TRUCK CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Wisconsin S.B.Fracker (September 15). "This insect is about normally abundant throughout the State this year, not being as numerous as it was last year."

POTATO LEAFHOPPER (Empoasca mali LeB.)

Wisconsin S.B.Fracker (September 15). "Early Ohio potatoes began to die of hopperburn in the southern counties on July 10. Serious damage throughout the State. All unsprayed potatoes are now down except Rural New Yorkers and a few late-planted fields of other varieties."

New York L.C.Tyler (August 19). "Leafhoppers are abundant in the potato fields in Genesee County and are doing a great deal of damage in unsprayed fields."

TARNISHED PLANT-BUG (Lygus pratensis L.)

Utah I.M.Hawley (September 2). "This insect is causing the tops of turn brown in many potato fields in Morgan County."

POTATO TUBER MOTH (Phthorimaea operculella Zell.)

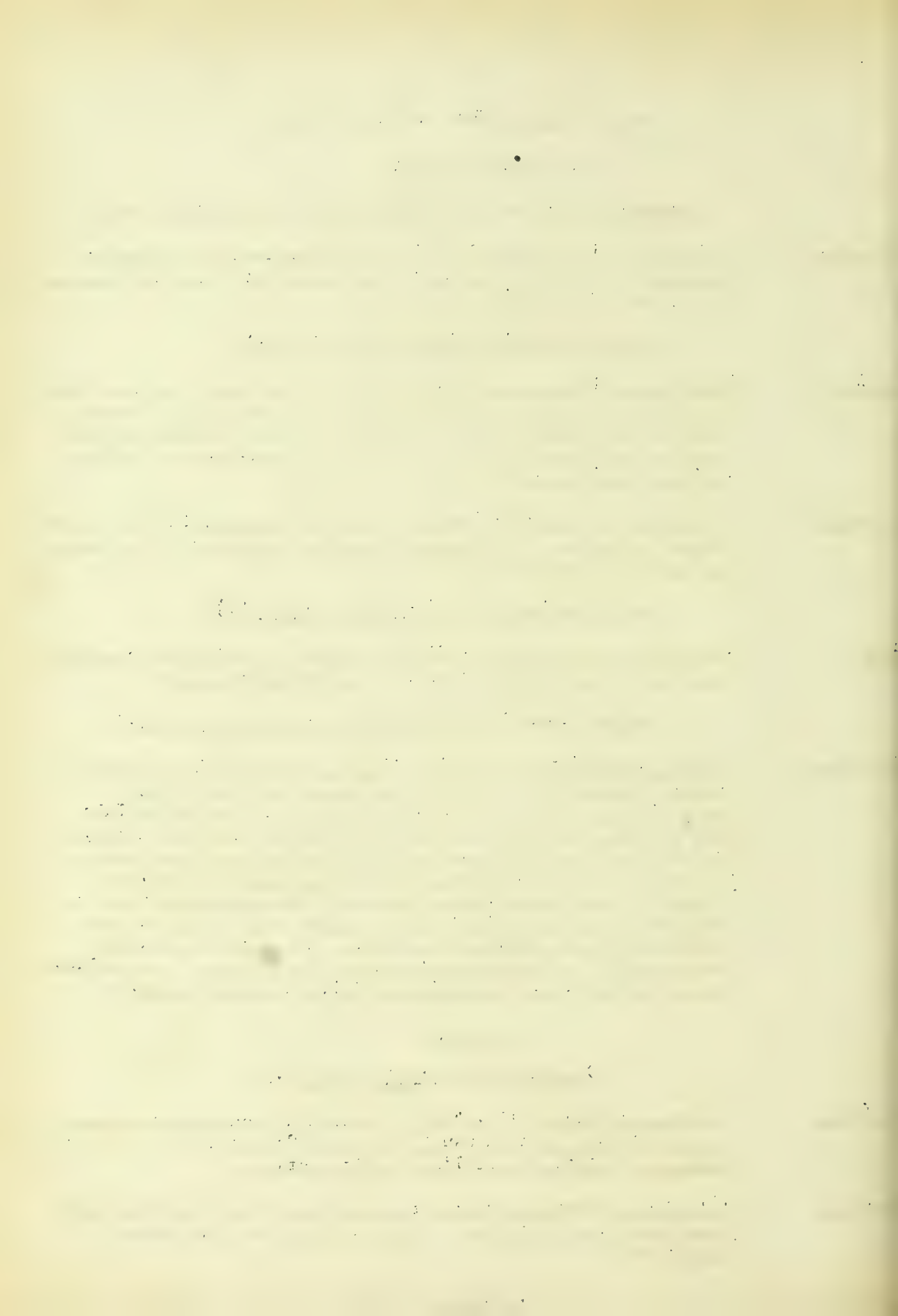
California R.E.Campbell (September 18). "Car shipments in Los Angeles County started about June 16 and about the 23rd slight infestations of about 5 per cent were observed. During July the infestation increased to from 20 to 25 per cent in many cars. Some fields showed easily 50 per cent of the potatoes affected. The total number of cars inspected was 578. Of these 213 were found to be infested. The estimated loss was between 15 and 20 per cent of the crop. These figures are from the reports of Mr. H.H. Warner, district supervising inspector of the State department of agriculture, and Mr. E.J. Ryan, horticultural commissioner of Los Angeles County."

CABBAGE

CABBAGE WORM (Pontia rapae L.)

New York M.C.Hammond (August 19). "This insect has been somewhat more abundant this year than usual in Orange County and has caused damage to most of the fields in this section."

Maryland J.A.Hyslop. "Cabbage worms are more numerous than they have been during the past three years in southern Montgomery County."



Indiana J.J.Davis (September 19). "During the last two weeks several reports of severe injury by the cabbage worm have been received from various parts of the State."

CABBAGE WEBWORM (*Hellula undalis* Fab.)

Alabama F.J.Thomas (August 25). "This insect is rapidly increasing in Russell County, where it is much more serious than usual. Of 320 collards examined 82 were dead as the result of infestation and 77 plants dwarfed or badly stunted because of the leaves cut off or the bud destroyed. In Lee County an infestation of young turnips is just beginning."

W.E.Hinds (September 21). "The turnip webworm is doing unusual damage to fall crops of turnips, rape, collards, etc. This species occurs widely distributed throughout Alabama and is a serious pest. The Alabama Department Station is undertaking a thorough study of its life history and methods for its control."

HARLEQUIN BUG (*Murgantia histrionica* Hahn)

Indiana J.J.Davis (September 19). "The Harlequin bug has been reported the past month as seriously damaging cabbage along the southern border of Indiana."

Louisiana T.H.Jones (August 14). "Complaints of damage have been received from Jackson Parish, the insect attacking collards."

STRAWBERRY

STRAWBERRY ROOT-WEEVIL (*Brachyrhinus ovatus* L.)

California (California Weekly News Letter, August 28). "The strawberry root-weevil was intercepted at Truckee under date of August 28. This is one of the strawberry weevils which occasioned the issuance of Quarantine Regulations Nos. 9 and 10 covering the admission of strawberry plants from the States of Oregon and Washington."

BEANS

MEXICAN BEAN BEETLE (*Epilachna corrupta* Muls.)

Tennessee Neale F. Howard (September 25). "During September the Mexican bean beetle has been discovered in seven new Counties in Tennessee, i.e., Dickson, Robertson, ^{Madison} Williamson, Wilson, Cocke, and Claiborne."

Kentucky Neale F. Howard (September 25). "The report made from Madison County in the last number of the Survey Bulletin has proved incorrect. Specimens which were sent in by a correspondent in that county were not collected in that county. On September 19 specimens were collected from Simpson County."

Alabama

W.E.Hinds (September 21). "The Mexican bean beetle cleaned up the table beans of all kinds in the areas becoming generally infested in the fall of 1921 so that practically no green bean vines have existed since the middle of July. The spread of the species southward appears to have been light and no complaints have been received beyond the lines reached by the beetle a year ago. The influence of the prevailing direction of light breezed, which come from the south, explains, we believe, the slow spread in that direction."

Neale F.Howard (September 16). "The Mexican bean beetle was reported from Prattville, Autauga County, on September 11. This is the farthest south that this beetle has been reported in this State."

CUCUMBER

STEPPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Georgia

O.I.Snapp (August 30). "An unusually heavy infestation of the striped cucumber beetle was found three miles west of Woodbury, Ga."

BELTED CUCUMBER BEETLE (Diabrotica balteata Lec.)

Alabama

W.E.Hinds (September 21). "The belted cucumber beetle was found in the State for the first time only a few years ago when it appeared in the southwestern corner. The first specimens were taken at Auburn about two years ago. In the meantime, the species has multiplied and spread very rapidly until it is the most abundant species of Diabrotica through the central part of the State and appears to be displacing the common twelve-spotted cucumber beetle. Injury to beans and many other crops is commonly reported."

Louisiana

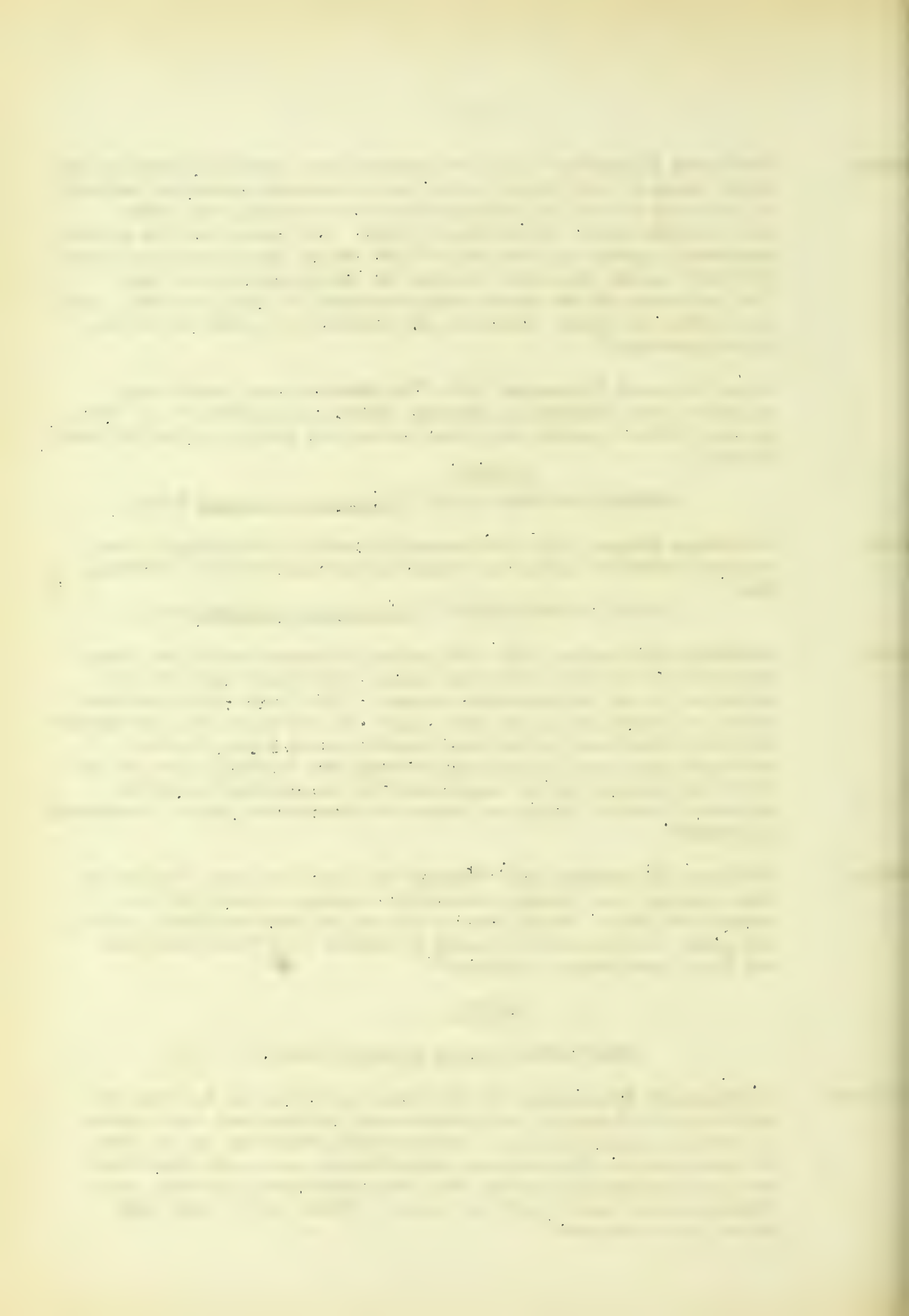
T.H.Jones (September 15). "During the last few years beetles of this species have become noticeably abundant during the late summer and fall. Complaints of damage to Irish potatoes, beans, etc., were received during early September from West Feliciana and East Baton Rouge Parishes."

MELONS

MELON APHID (Aphis gossypii Glov.)

California

R.E.Campbell (September 1). "In some localities in Los Angeles and Riverside Counties early unchecked infestations have spread to entire fields, causing a considerable reduction in the crop of late melons. Watermelons, canteloupes, and early muskmelons were not seriously affected but late muskmelons, casabas, and Persian melons are heavily infested. Other fields have only slight infestations."



SQUASH

SQUASH LADY-BEETLE (Epilachna borealis Fab.)

Maryland

F.H.Chittenden (September 8). "The squash lady-beetle has been decidedly more abundant the present year than last, being almost universally injurious to squash, pumpkin, and some other cucurbits in the District of Columbia and near-by Maryland and Virginia. It is still in the fields."

BEETS

BEEF WEBWORM (Loxostege sticticalis L.)

Nebraska

M.H.Swenk (September 1). "During the third week in August the stubble fields in Deuel County were overrun with the sugar-beet webworm. They were so numerous that the farmers were fearful of reseeding the infested fields to wheat this fall until assured that these pests would not injure the new crop."

THE HISTORY OF THE
CITY OF BOSTON

FROM THE FIRST SETTLEMENT
TO THE PRESENT TIME
BY
JOHN H. COVINGTON
OF THE BOSTON BAR
IN TWO VOLUMES
VOL. II.

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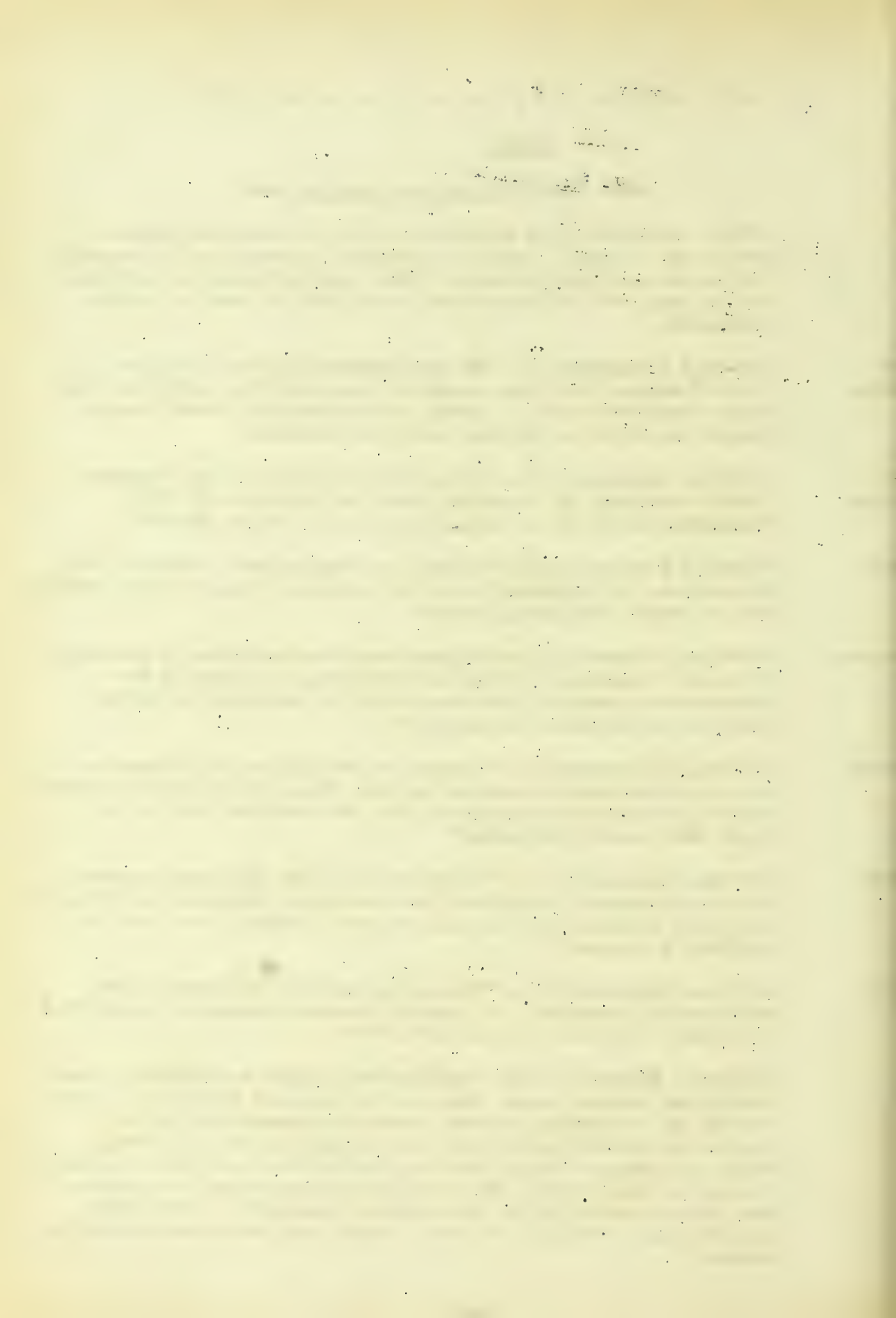
S O U T H E R N F I E L D - C R O P I N S E C T S

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

NOTE: The percentages given in previous boll-weevil reports are based on actual counts of punctured squares made in several fields at each point recorded. This does not mean the per cent of the crop lost or damaged but merely the per cent of squares punctured.

- North Carolina B.R.Coad (September 15). "In the southern counties near the South Carolina State line damage is considerable, extending from Union County to Scotland County and northward to Moore County. Damage is slight in the more northern counties."
- North Carolina B.R.Coad (September 15). "Boll-weevil conditions were reported from 7 counties, all reporting heavy infestations. In York County two-thirds of the bolls were damaged at one place."
- Georgia B.R.Coad (September 15). "Reports in Georgia were received from 21 counties, all reporting heavy infestations. Damage to the bolls were reported from Floyd County."
- Mississippi B.R.Coad (September 15). "Reports were received from 16 counties; of these 8 counties were heavily infested, all being in the southwestern corner of the State with the exception of McMinn County in the southeastern corner."
- Kansas B.R.Coad (September 15). "Reports on the boll-weevil situation were received from 30 counties in this State. Of these 25 counties generally distributed throughout the southeastern half of the State were heavily infested."
- Oklahoma B.R.Coad (September 15). "Seven counties from Oklahoma reported on the boll-weevil situation. The 4 counties lying east of Okfuskee and Atoka Counties were heavily infested, those to the west but slightly infested."
- Alabama B.R.Coad (September 15). "Twenty-six counties reported on the boll-weevil situation. Of these 22 counties generally distributed over this State were heavily infested."
- W.E.Hinds (September 21). "Boll-weevil injury has been much less during the present season than the May prospect indicated, largely because of the control exerted through the unusually dry hot weather continuing quite generally through the State in June, July, and August. During June the rainfall was less than one-third normal and this checked the weevil to the extent that the cotton has fruited unusually, in the southern two-thirds of the State, particularly. Rainfall for the 3 months has been only one-half the normal."



Mississippi B.R.Coad (September 15). "Reports were received from 11 counties in this State, 9 in the northern half of the State reporting heavy infestations."

Mississippi B.R.Coad (September 15). "Fifty-six counties^{reported} on the boll-weevil situation. Of these 39 counties reported heavy infestations. An area of light infestation occurred in the eastern part of the State over part of Bolivar, Washington, Sunflower, and DeFlore Counties, and a similar lightly infested area occurred in the northern part of the State from LeFlore to Tishomingo County southward to Chickasaw and Calhoun Counties."

Missouri B.R.Coad (September 15). "Boll-weevil specimens were received on September 6, from Kennett, Mo., and also reported as present at Hayti and Steele."

Texas B.R.Coad (September 15). "Boll-weevil reports were received from 11 counties in the eastern third of the State. Of these 10 reported heavy infestations."

BOLLWORM (Heliothis obsoleta Fab.)

Georgia O.I.Snapp (August 26). "Several cotton planters report this insect ~~has~~ causing serious damage to cotton in Middle Georgia. Some of this damage had been noted in fields that had been dusted four times for the cotton boll-weevil."

Kansas B.R.Coad (September 15). "The bollworm was reported from Nashville in Howard County this year."

Mississippi T.H.Jones (September 15). "Specimens of larvae were sent in from various parts of the State during the latter part of August with reports that they were seriously injuring cotton bolls."

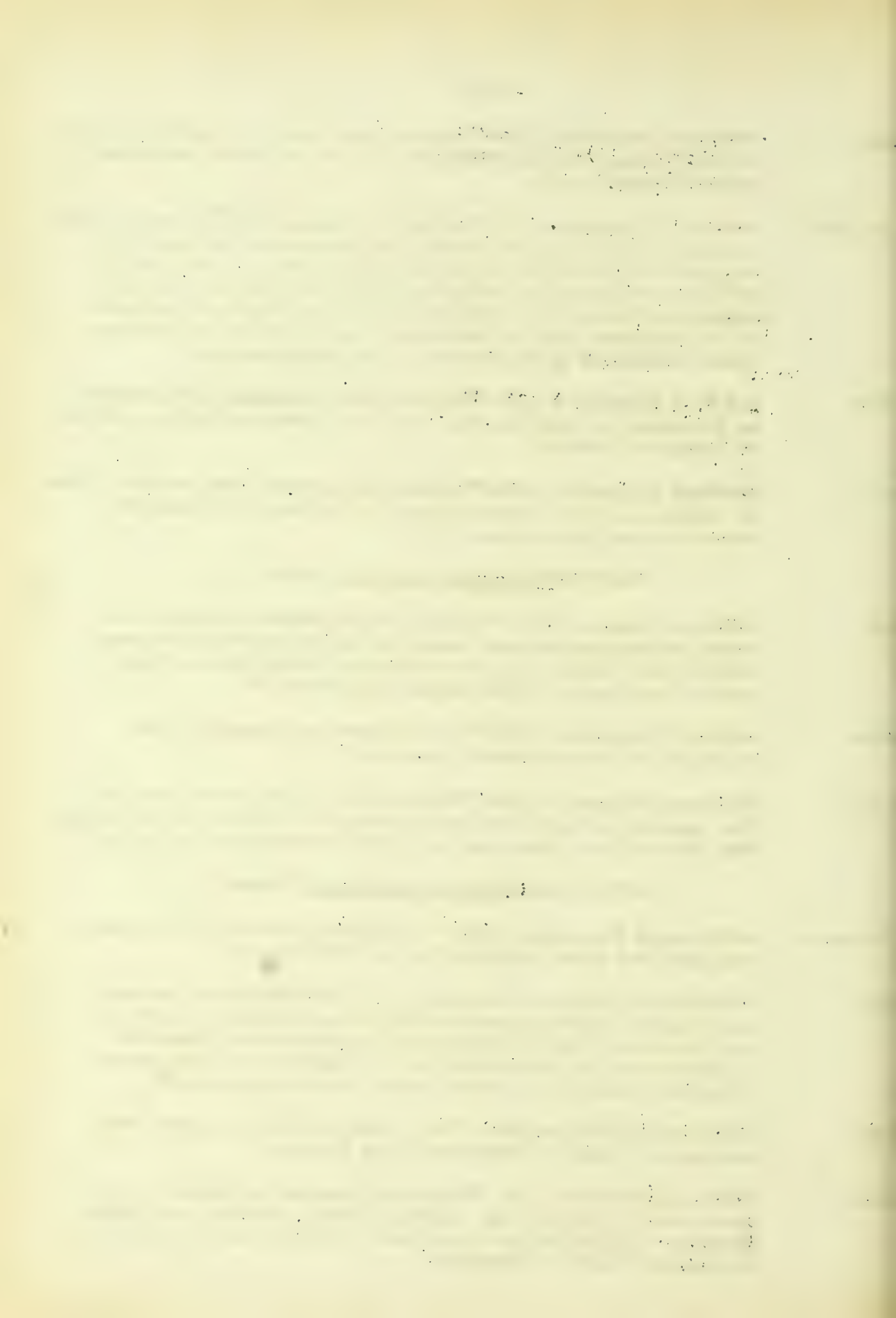
COTTON WORM (Alabama argillacea Huebn.)

New Hampshire H.T.Fernald (September 21). "A perfect specimen of the cotton worm moth was taken September 16 at Bethlehem."

Virginia W.J.Schoene (Telegram September 22). "Defoliation by cotton worm reported from 4 counties, Norfolk, Nansemond, Dinwiddie, and Brunswick. The county agents of Norfolk and Brunswick reported that the defoliation was so serious that the owners of cotton fields were dusting under their directions."

Illinois W.P.Flint (September 18). "First adults of this species were taken on the night of September 12 at Urbana."

Mississippi W.R.Coad (September 15). "Heavy infestations of cotton worm larvae were reported from Tipton, Fayette, Shelby, and Gibson Counties. Slight infestations were reported from Carroll, Hardin, and Hardeman Counties."



- Arkansas B.R.Coad (September 15). "Damage by cotton leafworm reported from Desha, Columbia, Grant, Mississippi, and Miller Counties. Slight infestation in Lonoke and Lincoln Counties."
- Alabama W.E.Hinds (September 21). "The cotton leaf caterpillar has been so completely checked in its August development by dry hot weather that no serious stripping has occurred or is now likely to occur in Alabama this season. Preparations were made for poisoning this pest, but little application of poison has been necessary."
- Louisiana T.H.Jones (September 15). "Since my last report August 15, the cotton caterpillar has continued to feed on cotton generally over the State."
- B.R.Coad (September 16). "Heavy infestations were reported from East Carroll, Webster, Bienville, Union, Tensas, and Caddo Parishes."
- Mississippi B.R.Coad (September 15). "Heavy infestations of the cotton leafworm were reported from 12 counties."
- Texas M.C.Tanquary (August 22). "The cotton leafworm has been serious over the eastern third of the State, reports of heavy feeding having been received from 14 counties, all lying east of Coryell County, and extending from Lamar County on the north to Dewitt County on the south."

FOREST AND SHADE - TREE INSECTS

GENERAL FEEDERS

GIPSY MOTH (Porthetria dispar L.)

Massachusetts R. A. Van Meter (September 13). "Gipsy moth larvae have been less abundant this season, in Middlesex County and the district south of Boston than for many years."

WHITE GRUBS (Phyllophaga spp.)

Massachusetts H. B. Pierson (September 13). "Experiments are being tried using crude white arsenic in an endeavor to control these insects which have caused serious damage to seed beds in Maine, New Hampshire, and Vermont."

FALL WEBWORM (Hyphantria cunea Drury)

Massachusetts H. B. Pierson (September 13). "The webworm is present in large numbers on elms in Augusta. At the present time they are about half grown."

Massachusetts H. T. Fernald (September 21). "The fall webworm has been more noticeable than usual during the past month, but is not present in what might be termed destructive abundance."

Connecticut B. A. Porter (August 26). "This insect seems to be more abundant than usual in the region north of Wallingford."

W. E. Britton and assistants. "This insect seems to be very abundant in Hartford, Windham, and Tolland Counties, and reported as abundant in New London and Fairfield Counties."

Connecticut E. N. Cory (September 15). "This insect is much more abundant than usual at Whiteford and generally over Hartford and Carroll Counties, where practically all of the walnut trees have been stripped. They have all now pupated."

Georgia O. I. Snapp (August 30). "This insect is unusually abundant in west-central Georgia on pecans, persimmons, etc. A number of the trees in the woodlands of Upson and nearby counties were noted to be defoliated on this date."

Alabama W. E. Hinds (September 2). "Fall webworms have been exceptionally abundant in the northern half of the State, especially on persimmon and other wild food plants, but are attacking pecans particularly among the more valuable economic host plants."

FOREST TENT CATERPILLAR (Malacosoma disstria Hübner.)

Maine H. B. Pierson (September 13). "Both cocoons and eggs of the tent caterpillar were heavily parasitized. In some sections of the woods in northern Maine it is difficult to find cocoons that have not been destroyed by a parasite. This means that comparatively small numbers of egg masses were laid, considering the serious outbreak that occurred in this region earlier in the season."

Massachusetts R. A. Van Meter (September 13). "Larvae were plentiful in eastern Massachusetts again this year and egg masses are very common in apple orchards."

BEECH

WOOLLY BEECH APHID (Prociphilus imbricator Fitch)

Connecticut E. H. Hollister (September). "This insect was first found in Hartford County by the gray color of the ground underneath the trees which was caused by some discharge from the aphid. Only some of the lower branches seem to have insects on them. This outbreak is much worse than usual in this region."

Maryland J. A. Hyslop (September 5). "This aphid is much more abundant than it has been during the past three or four years in southeastern Montgomery County. The insects completely cover many of the lower branches, giving the branch the appearance of being covered with a cottony quivering vesture. Sometimes branches up to 1 inch thick are completely covered for several feet. These aphids are so numerous that under some of the trees the ground is discolored by a blue sooty mold growing in the honeydew, and on the trunks of the trees large masses of a yellow fungus having the texture of sphagnum moss are growing in the same honeydew."

BIRCH

BIRCH LEAF-SKELETONIZER (Bucculatrix canadensisella Chambers.)

Massachusetts H. T. Fernald (September 21). "The white birch has been attacked by the birch Bucculatrix practically over the entire State. From Boston west to beyond Worcester, even tiny birches not more than a foot high have been completely skeletonized, and the birch trees look as though fire had run through them. This condition is also present throughout the Connecticut Valley, though here and there areas of only partial skeletonizing appear. I have not been able to ascertain whether or not this insect is present in the Berkshires."

New Hampshire H. T. Fernald (September 21). "On a trip last week up through the White Mountains, there were evidences of its work up the Connecticut River to Wells Junction and through the White Mountains here and there, but it seemed to be less in evidence around Lake Winnepesaukee. Around Concord it was also noticeable, and across the southern end of the State to Keene, on the west. On the whole, however, I should hardly consider the New Hampshire defoliation as severe as that in eastern Massachusetts, where it is the worst I have ever seen it."



Connecticut W. E. Britton and assistants. "This insect is entirely skeletonizing the birch trees in Willard and New Haven, and generally throughout the eastern part of the State. Nearly all gray birches are now brown. Other trees are attacked but less seriously injured."

New York E. P. Felt (September 23). "This insect has been exceptionally abundant on birches, especially in the northern portion of the State and particularly in the Adirondacks. Considerable areas in this latter section and adjacent thereto have been so thoroughly skeletonized that practically all the leaves dried and dropped. The injury was not so severe in the vicinity of Albany as in 1921. Mr. R. E. Horsey found the insect somewhat abundant or destructive to more than 10 species growing in Highland Park, Rochester."

Michigan R. H. Pettit (August 30). "I received today specimens of the birch skeletonizer reported from Cheneaux Highland as destroying the foliage of birch throughout that part of northern Michigan."

Wisconsin C. L. Fluke. "Every tree of whatever variety with the exception of evergreens is infested with the worm and it begins to look as though the trees would be destroyed. The territory infested covers thousands of acres, several hundreds of which belong to the City of Two Rivers. Cocoons are now being formed, so the damage is over for this season."

BRONZE BIRCH BORER (Agrilus anxius Gory)

New York R. E. Horsey (September 23). "This insect continues to be destructive in different parts of the State, and it is not unusual to see weeping birches in a dead or dying condition even in the residential areas."

Wisconsin F. A. Fenton (September 13). "The bronze birch borer has been reported from the following counties: Dodge, Cedar Rapids, and Eagle Grove."

SAWFLY (Nematus sp.)

Maine H. B. Pierson (September 13). "During the latter part of August a yellow sawfly was very numerous on white birch, stripping large areas. Poplar and other hardwoods were apparently immune."

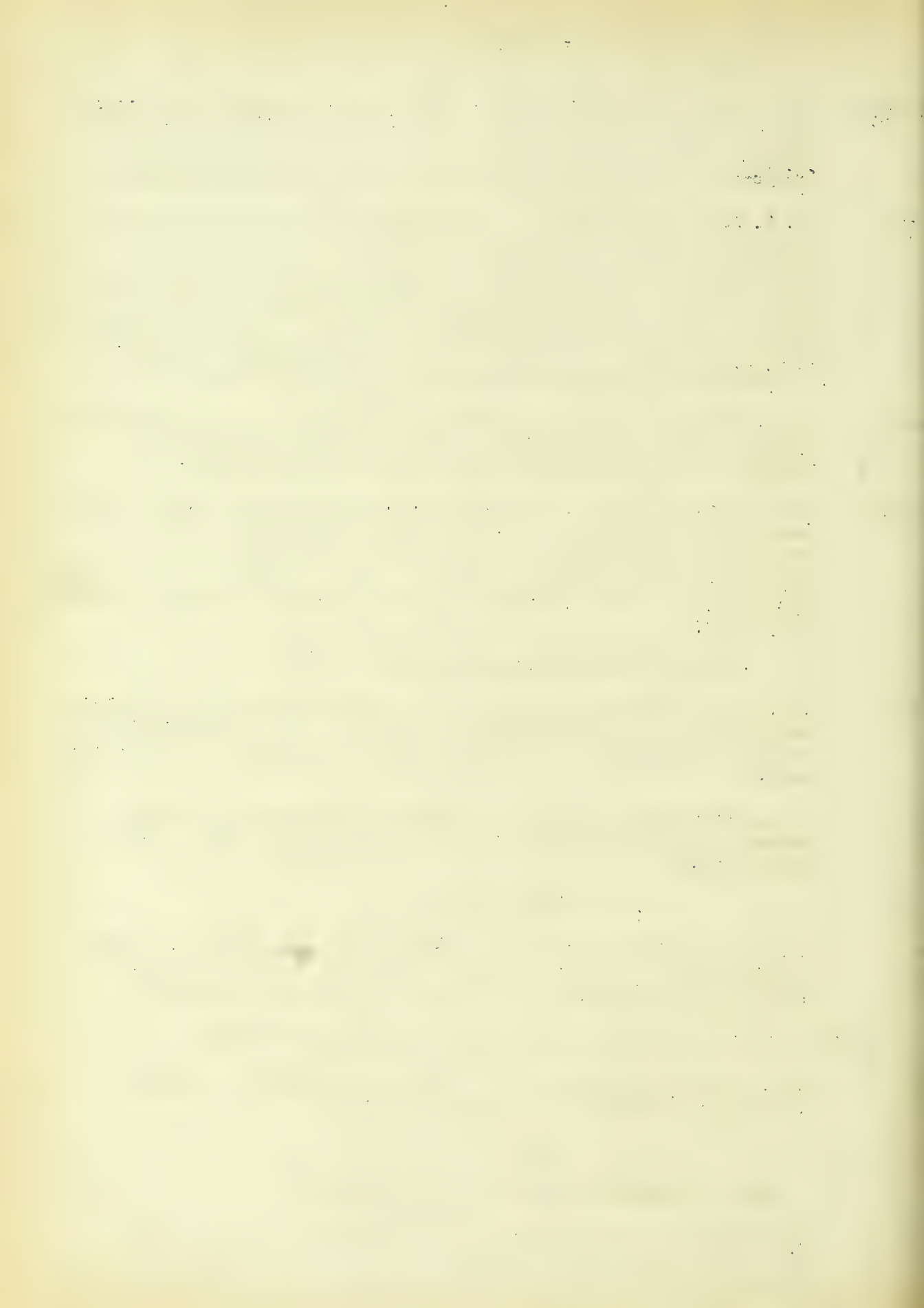
WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

Maine H. B. Pierson (September 13). "This insect stripped several areas of birch in northern Maine during August."

ELM

ELM LEAF-BEETLE (Galerucella luteola Mull.)

Maine H. B. Pierson (September 13). "The elm leaf-beetle has done considerable damage this summer in some of the cities in the central part of the State."



Connecticut F. A. Bartlett (September 19). "This insect is more abundant than it has been for the past five years in Stamford and Greenwich."

New York R. E. Horsey (September 13). "The elm leaf-beetle is reported as spreading somewhat in Rochester."

ELM BORER (Saperda tridentata Oliv.)

Illinois W. P. Flint (September 18). "Many reports of injury by this insect have been received from central and southern Illinois."

LARCH

LARCH CASE-BEARER (Coleophora laricella Huebn.)

Maine H. B. Pierson (September 13). "This insect, which earlier in the season assumed alarming proportions in the region between Augusta and the coast, has gained a strong foothold in the area around Moosehead Lake."

LARCH SAWFLY (Nematus erichsonii Hartig)

Maine H. B. Pierson (September 13). "The larch sawfly is again becoming abundant in certain localities but heavy rains have done much to keep this insect in check. Thirty-five years ago this insect killed nearly all of the larch of the State and it has been slow in gaining a foothold again. Interesting stories are told of how the caribou left the State after the destruction of the larch by the sawflies, the caribou living almost entirely in stands of larch."

MAPLE

MAPLE BORER (Glycobius speciosus Say)

Maine H. B. Pierson (September 13). "This insect has been unusually abundant on shade trees this year. Last year comparatively few inquiries were received in regard to this insect."

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Indiana H. F. Dietz (August 28). "The ladybird beetle Hyperaspis signata Oliv. is doing some valuable work in controlling the cottony maple scale according to observations made at Muncie."

OAK

ORANGE-STRIPED OAKWORM (Anisota senatoria A. & S.)

New Jersey Henry Fox (August 31). "Caterpillars of this moth are swarming on nearly every oak tree in New Lisbon and Browns Mills. Many of the trees are nearly completely defoliated. It is especially destructive on Quercus ilicifolia."

POST-OAK LOCUST (Dendrotettix quercus Pack.)

Jersey Henry Fox (August 31). "A local outbreak of this insect was observed 3 miles south of Browns Mills, the foliage especially of sapling oaks extensively eaten. The grasshoppers are very sluggish and easily captured. This outbreak was first observed by a Japanese beetle scout about three weeks ago."

WALNUT CATERPILLAR (Datana integerrima G. & R.)

orgia O. I. Snapp (September 13). "These insects had completely defoliated several young oaks near Fort Valley which were planted for ornamental purposes. The infestation was so severe in this grove that arsenical spraying had to be enforced in order to prevent further destruction."

PINE

MOUNTAIN PINE BEETLE (Dendroctonus monticolae Hopk.)

mana J. C. Evenden (September 6). "This epidemic crossed the Continental Divide from the Blackfoot Valley and now threatens to destroy the valuable stands of lodgepole pine east of the mountains in Helena National Forest."

WESTERN PINE BEETLE (Dendroctonus brevicornis Lec.)

so J. C. Evenden (September 6.). "In the Payette River Valley there has been a very serious epidemic of this insect. At the present time the infestation is centered in a small area which will be placed under control during the coming winter in order to prevent the spread of the beetles into adjacent stands."

PALES WEEVIL (Hylebius pales Herbst)

ie H. B. Pierson (September 13). "The pales weevil is present throughout southern Maine."

WHITE PINE WEEVIL (Pissodes strobi Peck)

ie H. B. Pierson (September 13). "The white pine weevil was even found in isolated clumps of pine in northern Maine. It is not present in this region in any quantity owing to the small number of white pine present."

A SAWFLY (Neodiprion sp.)

mana J. C. Evenden (September 6). "The forest supervisor in Custer National Forest reports considerable damage being done to yellow pine by sawfly larvae."

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POPLAR

(Phyllonorycter tremuloidella Braun)

Idaho

J. C. Evenden (September 6). "Practically every poplar shade tree in the City of Coeur d'Alene, Idaho, is heavily attacked by these insects."

POPLAR SAWFLY (Trichocampus viminalis Fallen)

New York

E. P. Felt (September 23). "The poplar sawfly has been somewhat abundant and injurious to Carolina poplars in Fulton and Saratoga Counties."

FIR

SPRUCE BUDWORM (Tortrix fumiferana Clem.)

Maine

H. B. Pierson (September 13). "This insect has been found in limited numbers throughout the northern two-thirds of the State. At the present time fully three-fourths of the mature fir in the State is dead owing to the ravages of this insect."

BLACK GUM

BLACK GUM CASE-BEARER (Antispila nyssaefoliella Clem.)

Connecticut

W. E. Britton (September 20). "This insect, which has not been observed for several years, has completely browned the foliage of several trees at Orange in this State."

Pennsylvania

S. W. Frost (September 15). "The case-bearer was found extensively abundant on black gum in the vicinity of Newton, Bucks County. The trees show nearly 100 per cent of the leaves infested, and whole trees were brown from the attack of this insect."

WILLOW

Flagidera versicolora Laich.

Connecticut

F. A. Bartlett (September 19). "This insect is a very serious pest of willows at Stamford and is spreading rapidly. There is scarcely a tree that is not at least two-thirds defoliated regardless of variety, excepting the pussy willow."

GREENHOUSE AND ORNAMENTAL

PLANT INSECTS

ASTERS

Correction: (Volume 2, No. 6, page 226). The caption "Pictipes sp." is a typographical error and should read "Eisonyx picipes Pierce".

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea Loew)

Indiana

H. F. Dietz (August 28). "Light infestations by the chrysanthemum gall midge are occasionally found in the State but most florists are having little difficulty in exterminating this insect by using one fluid ounce of 40 per cent nicotine sulphate with 1 ounce of fish-oil or other cheap soap in 4 gallons of water, applying the spray every three days."

MARGUERITE LEAF-MINER (Phytomyza chrysanthemi Kowarz)

Indiana

H. F. Dietz (August 26). "The chrysanthemum leaf-miner seems to be coming back, especially where asters are grown under glass. They attack asters first and then go to chrysanthemums."

THRIPS (species undetermined)

Indiana

H. F. Dietz (August 26). "An undetermined species of thrips is doing considerable damage to asters and chrysanthemums, especially in the northeastern part of the State."

ROSE

SADDLE-BACK CATERPILLAR (Sibine stimulea Clem.)

Delaware

C. O. Houghton (September 1). "This insect is doing considerable damage to roses at Newark."

ROSE MIDGE (Dasyneura rhodophaga Coq.)

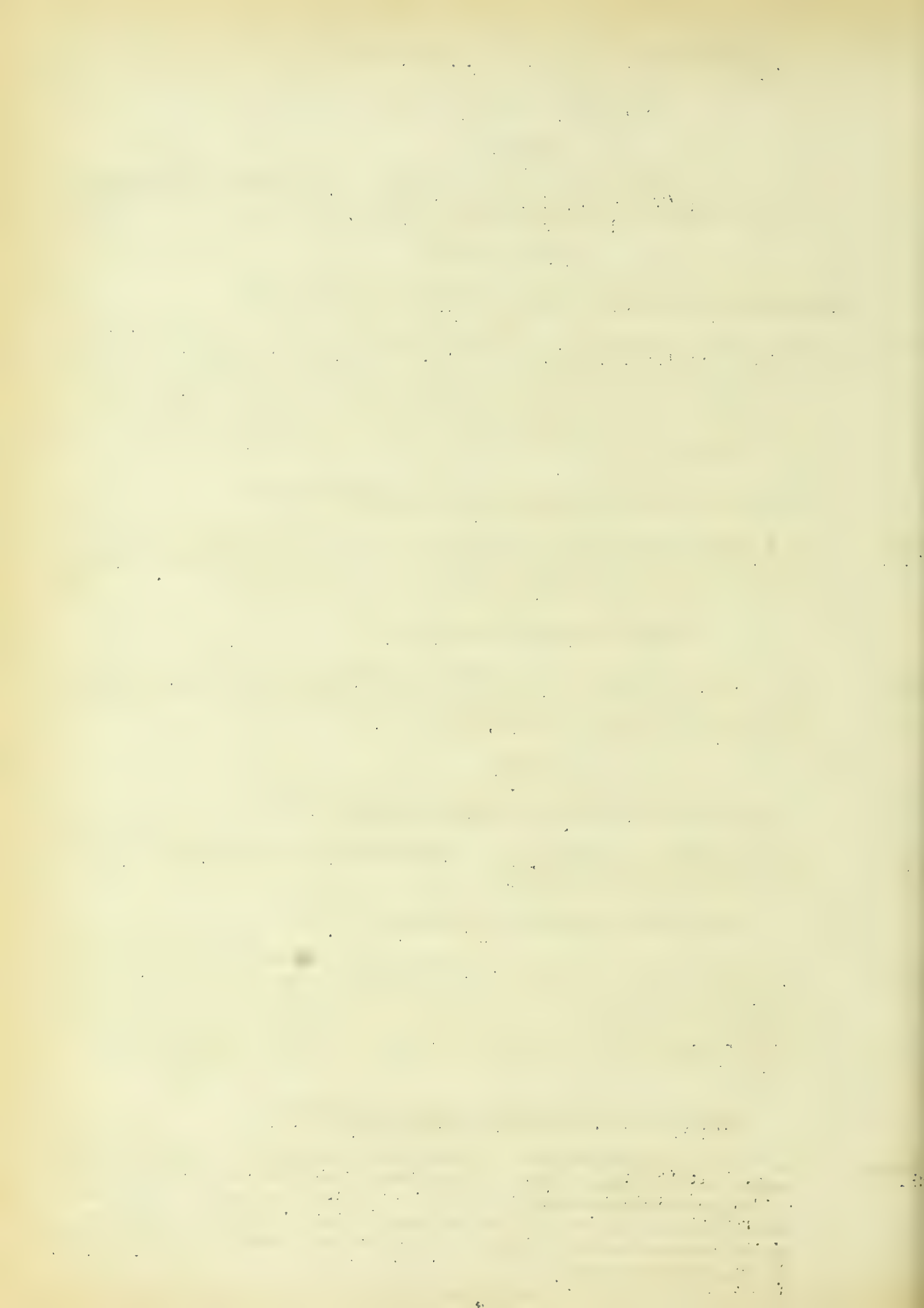
Indiana

H. F. Dietz (August 26). "The rose midge is quite bad again on the varieties Ophelia, Premier, and Butterfly in the northeastern part of the State. Nightly fumigation with tobacco stems or prepared nicotine extract gives good control but I find a number of cases where even a fumigation for four weeks has not exterminated the pest."

LONG ROSE GALL (Rhodites dichlocerus Harr.)

Michigan

E. P. Felt (September 23). "There was an unusually severe, though local, infestation of Rosa rugosa bushes in Michigan, judging from the report and specimens submitted. Some of the rose bushes had every growing tip badly infested and, consequently, satisfactory growth another season could be obtained only through the development of adventitious buds."



INSECTS INFESTING HOUSES AND PREMISES

PTINID BEETLES (Hadrobregmus carinatus Say and Anobium sp.)

New York C. R. Crosby (August 1). "Both of these beetles were reported as badly infesting flooring at Waterport, N. Y. - The species were determined by Mr. W. S. Fisher."

A POWDER-POST BEETLE (Lyctus sp.)

Maine H. B. Pierson (September 13). "An interesting report was received in regard to a barn that had been built 60 years and that was beginning to crumble, due to the presence of these borers in the large timbers."

ARGENTINE ANT (Iridomyrmex humilis Mayr)

Alabama W. E. Hinds (September 21). "The Argentine ant is attracting increased attention and campaigns for its suppression are being arranged in two of the largest cities of the State. Through the control in such centers of population its spread to the strictly rural districts may be retarded most easily and effectively."

TERMITES (Reticulitermes tibialis Banks)

Nebraska M. H. Swenk (September 1). "Late in August a lumber company in Harlan County reported that termites were destroying a valuable lumber yard of frame construction on concrete foundation."

BLACK FLIES (Simulium spp.)

Maine H. B. Pierson (September 13). "Black flies are more numerous this year than they have been for some time. Swarms of larvae were present on the rocks in streams."

CRICKETS (species undetermined)

Indiana J. J. Davis (September 19). "On September 1 a correspondent at Elkhart reported that for the past month his house has been almost overrun with crickets, which not only make a great deal of noise but are eating good-sized holes in the rugs, etc."



INSECTS ATTACKING DOMESTIC ANIMALS

SHEEP SCAB (Psoroptes communis Furst.)

California (California Weekly News Letter, Volume 3, No. 34). "During the eighteen months ending June, 1922, this disease necessitated the dipping of 2,102,000 sheep. Making a conservative estimate that dipping costs five cents per head, this item alone amounted to \$105,000. Since a great economic loss to sheep men can be prevented annually by eradicating this disease, most stringent methods should be put into effect."

THE INSECT PEST SURVEY BULLETIN

A monthly review of entomological conditions throughout the United States

Volume 2

November 1, 1922

Number 8

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

CUTSTANDING ENTOMOLOGICAL FEATURES FOR OCTOBER, 1922.

This number brings to a close Volume 2 of the Insect Pest Survey Bulletin. An index will appear within the next few weeks and be followed later in the winter by an annual summary.

During the month the false wireworms have proved to be much more seriously abundant than usual in western Nebraska, Kansas, and Oklahoma. In parts of Kansas planting has been discontinued owing to the depredations of these pests. This is correlated with a heavy drought which prevented germination of the grain.

The chinch bug is going into hibernation in Indiana, Illinois, and Nebraska in large numbers. Weather conditions so far have been very favorable for this pest. It is spreading northward in Indiana to the northernmost boundary of the State.

The corn earworm is much less abundant throughout its entire range than was the case last year, with the exception of a rather serious outbreak in Dallas County, Tex.

No alarming spread or intensification of infestation of the European corn borer has been noted in any of the more westerly areas in the United States this year. The conditions in Ohio and Michigan, except for a slight spread in the contiguous territory, remain much the same as those prevailing in the fall of 1921.

The fall armyworm has been unusually abundant this year in Kansas and New Mexico. Less important outbreaks are reported from Iowa and Indiana.

The Mexican bean beetle has been recorded from 10 new counties in Kentucky. It is now known to be present over practically the entire central area of this State. During the month it has also been reported from 4 new counties in western North Carolina.

The pea aphid has attracted such general attention during the past season in the cannery sections as to occasion the calling of a general conference on this pest to be held in Chicago early in November.

The outbreak of the spruce budworm which developed in Maine last year seems to be waning. This is reported as undoubtedly one of the most serious outbreaks of this pest ever recorded in North America.

The Japanese beetle has developed a new interest, doing serious damage to putting greens on golf links.

Cases of dengue fever to the number of 3,982 have been reported up to October 21 in Louisiana, 3,476 cases have been reported up to October 28 in Dallas, Tex., and serious outbreaks reported from a number of the other important cities in this State.

CEREAL AND FORAGE - CROP INSECTS

WHEATHESSIAN FLY (Phytophaga destructor Say)

Illinois W. P. Flint (October 20). "The fly-free date will apparently hold good throughout the State with the exception of a very slight infestation in northern Illinois; here wheat should be sown a day or two after the advised seeding date."

Kansas J. W. McColloch (September 27). "Fall emergence began in Riley and Wabaunsee Counties about September 21. Eggs are numerous on volunteer wheat. Wheat planting is well under way. An examination of many fields of volunteer wheat in central Kansas on September 26 showed a general light infestation. In the southern part of Saline County eggs were hatching."

A FALSE WIREWORM (Eleodes opaca Say)

Nebraska M. H. Swenk (October 1). "Hundreds of acres of unsprouted winter wheat have been destroyed by this pest during the present month in the vicinity of Big Spring, Deuel County, while lying in the dry soil."

Kansas J. W. McColloch (September 27). "The weather has been dry and hot. Wheat planting is under way but the soil is dry and germination is slow." (October 20) "The abundance of this pest in the western part of the State has greatly increased. The fall has been dry and seed has been in the ground from three to five weeks without germinating. At Sublette worms have taken whole fields; at Selden worms are thick in thousands of acres; in many fields in Greeley and Wichita Counties the damage ranges from 40 to 75 per cent. At Liberal on October 9th it was estimated that 50 per cent of the wheat was taken, and at Plains the farmers stopped drilling."

Oklahoma J. W. McColloch (October 20). "We have reports of this insect from Tyrone, Okla., in which it is stated that injury is occurring throughout the northwestern part of that State."

WIREWORMS (Pholetes sp.)

North Dakota C. N. Ainslie (May 22). "In a field of young wheat, just across the road from a cornfield at Beach, N. Dak., I took within a minute or two about a dozen specimens of a slender gray elaterid that I had never seen previously. These were, apparently, congregated within a small area, for further search produced no more of them in the vicinity."



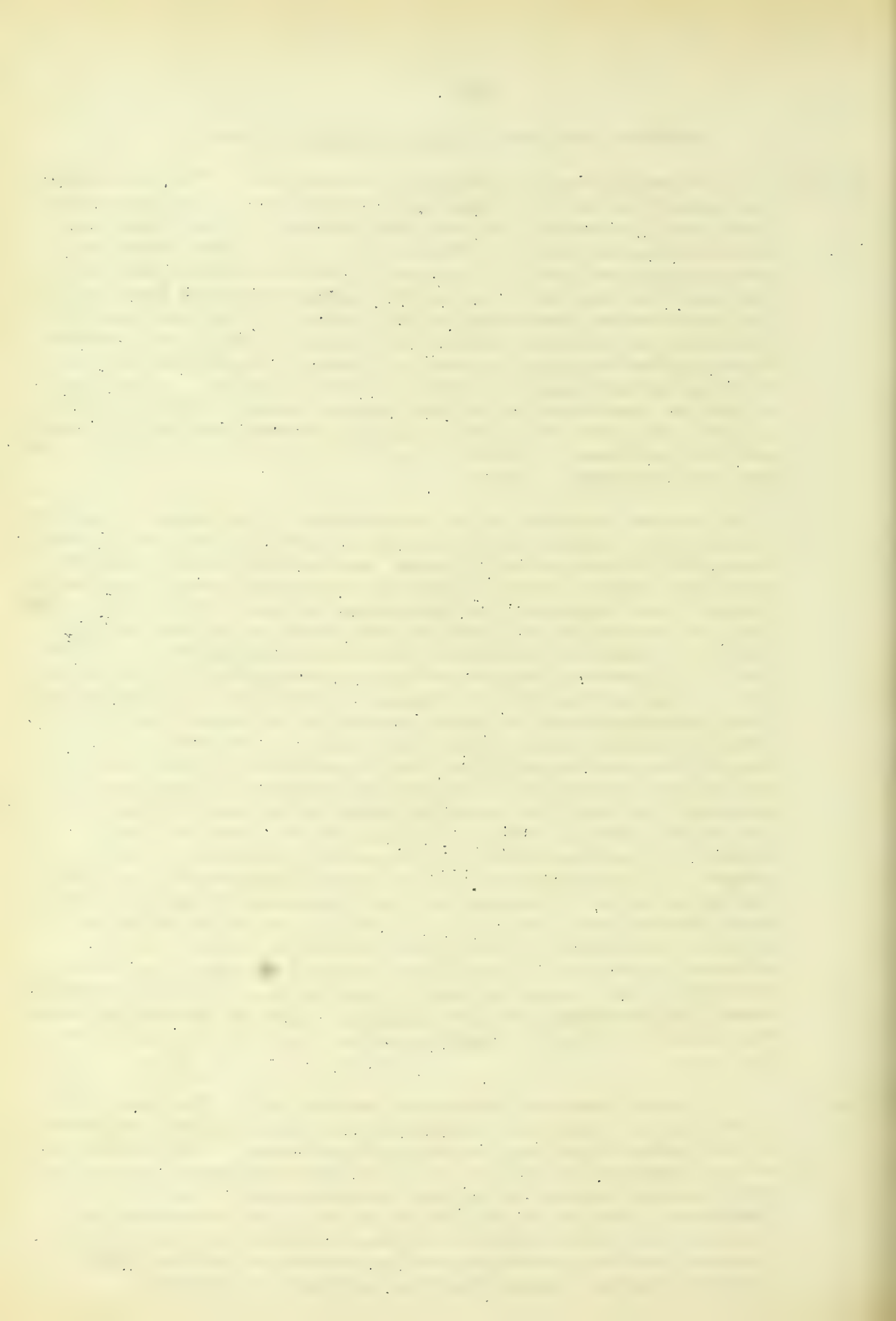
CORN

EUROPEAN CORN BORER (Pyrausta nubilalis Huebn.)

New England W. R. Walton (Bureau of Entomology October 25). "In New England the natural spread observed late in the present season has been unexpectedly extensive; 34 new towns have so far been found infested in Massachusetts. The western border of the infestation now embraces the town of Worcester. The southwestern edge of this area has progressed across the eastern border of Rhode Island and now embraces five towns in that State. To the northward an extensive new wedge of infestation has progressed up the Merrimac Valley in New Hampshire as far as Bristol, and the total number of towns so far found infested in this State is 25. A similar spread has been noted in the southwestern corner of Maine, where 11 new towns have been found infested, the most northerly of which are Saco and Lyman. The northern edge of this infestation has not yet been definitely located.

"The factors involved in the production of this unusual dispersion of moths are believed to be about as follows: In 1918 and the early part of 1919 large areas of vacant land bearing heavily infested weeds and growths of wild plants were extensively treated by the United States Department of Agriculture by means of fire, etc., in order to destroy the millions of corn borers which were breeding in them. This, it is believed, prevented wide dispersal. Since that time, however, funds have not been available for this purpose, and nothing has been done to diminish the production of moths from these extensive areas of weeds, consisting of vacant city lots, abandoned market garden areas, etc., and, as a consequence, the insects have bred by millions continuously for two years and are now seeking better feeding conditions elsewhere. They have naturally followed the prevailing winds to the northward and have entered the fertile Merrimac Valley along the lines of least resistance, and have flown up the coast of Maine in a similar manner. The past summer has been almost unprecedented in eastern Massachusetts as a favorable one for the growth of weeds, and it seems obvious that a very heavy second generation of moths has occurred as a result of conditions prevailing there. It is estimated that in the Mystic Park weed area at Arlington, Massachusetts, a very extensive tract, there exists a corn borer population of approximately 406,000 per acre. Some of the smaller areas were found to harbor a population of at least one million borers per acre."

New York W. R. Walton (Bureau of Entomology October 25). "In western New York there has been an extensive spread eastward in the direction of the prevailing winds, including 47 new towns. The eastern edge of this infestation projects to the eastern border of Wyoming County. The County of Niagara in the northwestern corner of the State, immediately east of the Niagara River, has been found completely infested this year, and it is believed that most of the spread observed in this particular area has been caused by the flight of moths from the heavily infested districts in Ontario.



This theory is borne out by the fact that there has been little, if any, apparent intensification in infestation in the area immediately south of Buffalo in New York State. In eastern New York a total of 18 new towns have been found infested. They are all contiguous to the territory infested last year. The intensity of infestation in this area has also remained almost stationary."

Pennsylvania W. R. Walton (Bureau of Entomology October 25). "In Pennsylvania nine new counties have been discovered infested, contiguous to the territory of last year, but some of these are situated on the extreme head-waters of the Allegheny River, showing that the insect is extending slightly beyond the watershed separating the Ohio Basin from the low-lying region immediately surrounding Lake Erie."

Ohio W. R. Walton (Bureau of Entomology October 25). "In Ohio 25 new towns have been found infested, all contiguous to the territory of last year. The maximum rate of infestation observed in this State occurs in the neighborhood of Ashtabula, and is estimated at from 2 per cent to 5 per cent. Elsewhere the infestation apparently does not exceed about 1 per cent of stalks examined."

Michigan W. R. Walton (Bureau of Entomology October 20). "At the present writing five new towns have been found infested in southeastern Michigan, all contiguous to the territory of last year."

SMARTWEED BORER (Pyrausta ainsliei Heinr.)

Indiana J. J. Davis (October 20). "This pest, occurring in the upper parts of cornstalks, has been sent in several times the past month mistaken for the corn borer."

Iowa C. J. Drake (October 3). "This pest is very common in this State."

CHINCH BUG (Blissus leucopterus Say)

Indiana J. J. Davis (October 20). "Chinch bugs are abundant in their hibernating quarters. They extended their northern range to include most every county in the northern tier. The latest report is that they occurred in numbers in the western part of Lake County, the extreme northwestern county of the State."

Illinois W. P. Flint (October 20). "Heavy flights of bugs to winter quarters occurred on the 4th, 5th, and 6th and again on the 20th of this month."

Nebraska M. H. Swenk (October 1). "Conditions during September were favorable for the chinch bugs and, at the present time, they are abundant in the cornfields in two widely separated areas of infestation, one of which is along the southern border of the State and includes chiefly southern Gage, Jefferson, and Thayer Counties, and the other involves chiefly Boyd County in the northeastern part of the State. The number present in these two areas is sufficient to form a menace for next season, provided favorable conditions for the bugs continue until that time."

CORN EARWORM (Heliothis obsoleta Fab.)

- Massachusetts L. H. Patch (September 30). "The corn earworm is doing considerable damage throughout Barnstable County. One quarter-acre field of sweet corn at Chatham showed 100 per cent infestation, twenty stalks averaging 5 worms to the stalk, including ears with a maximum of 13."
- Connecticut B. H. Waldon (October 18-21). "The abundance of this pest about Botsford and Hamden is less than last year, 12 per cent of the crop being damaged."
- Maryland C. C. Hamilton (September 26). "This insect is reported as attacking lima beans at places around Cambridge, Md., eating holes into bean pods and beans inside the pods. Twenty-two per cent of the crop has been damaged. No eggs, pupae, or adults were noticed but larvae were common. One badly infested field was bordered on two sides by field corn, but dusting would probably do little or no good. It is intended to try poisoned bran mash."
- Iowa C. N. Ainslie (October 11). "While the injury from the corn earworm has been only moderately great during the past season, the moths have been attracted to lights recently in large numbers, showing that the pest is still actively present."
- Texas F. C. Bishopp (October 28). "This insect is somewhat more destructive this year than usual. A number of fields examined in Dallas County showed practically 100 per cent infestation of the ears in every instance."
- Idaho Claude Wakeland (October 19). "The corn earworm has been a serious pest to field and sugar corn in Cassia and Twin Falls Counties this year."

A STALK-BORER (Diatraea lineolata Walk.)

- New Mexico J. R. Horton (October 16). "Abundance of this pest was more than usual over eastern New Mexico from August 15 to September 30. From 20 to 100 per cent of the crop was infested from Romero, Tex., southwesterly through Tucumcari to Santa Rosa, thence north to Las Vegas and southward from Tucumcari to Portales. Milo and red amber sorghum were found injured to the extent of about 6 to 7 per cent. The weather was exceptionally hot and dry."

FALL ARMYWORM (Laphygma frugiperda S. & A.)

- Indiana J. J. Davis (October 20). "The fall armyworm was abundant, attacking corn at Aurora, Ind., October 3. This is the only report accompanied by specimens or reliable data."

Iowa C. J. Drake (September 14). "A field of 7 acres of timothy was damaged to the extent of 75 per cent in Allamakee County."

Kansas F. M. Wadley (October 16). "This pest proved to be much more abundant as compared with the average year and much less abundant in October than in August and September. The weather was exceptionally hot and dry. Damage by tunneling was 25 per cent."

New Mexico J. R. Horton (October 16). "This pest was unusually abundant over eastern New Mexico from August 15 to September 30. The weather during this period was exceptionally hot and dry. From 20 to 100 per cent of the crop was infested from Romero, Tex., southwesterly through Tucumcari to Santa Rosa, thence north to Las Vegas and southward from Tucumcari to Portales, the infestation being shared about equally with Diatraea lineolata. This pest tunnels into the buds, ears, and stalks like the corn borer in this territory."

ARMYWORM (Cirphis unipuncta Haw.)

Iowa C. N. Ainslie (October 11). "Armyworm moths have been quite numerous about lights in this vicinity during September, although no serious injury has been reported in this part of the State this season."

Carl J. Drake (September 21). "This pest was reported as attacking popcorn in Polk County."

DINGY CUTWORM (Feltia subgothica Haw.)

Iowa C. N. Ainslie (October 11). "Moths of the common cutworm have been unusually plentiful at lights here this summer and fall. Very little damage has been reported from this species during the past season."

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FRUIT INSECTS

APPLE

APPLE APHID (Aphis pomi DeG.)

- Connecticut F.A.Bartlett (September 19). "The worst infestation of plant-llice I have ever known, particularly on apples."
- Tennessee S.Marcovitch (October 18). "The oviparous females are beginning to appear and a few are full grown. No eggs deposited as yet."

ROSY APPLE APHID (Amuraphis roseus Baker)

- Tennessee S.Marcovitch (October 18). "Winged fall migrants were observed on apple together with first stages of young oviparous forms. A fall migrant was also found out of doors on narrow-leaved plaintain."

CODLING MOTH (Carpocapsa pomonella L.)

- Illinois C.C.Compton (September 15). "The second brood of the codling moth has been numerous in unsprayed orchards. Fifty to 100 per cent of the apples are wormy. Two orchards in Cook County, which were sprayed July 15, are heavily infested; on some trees 90 per cent of the apples are wormy."
- W.P.Flint (October 20). "The weather was very favorable for late second-brood and third-brood larvae, causing more than normal damage to fruit during August and September."
- Washington E.J.Newcomer (October 10). "The insect appears to be much worse as compared with average year, 22 per cent of the crop being damaged."
- Oregon M.A.Yothers (October 11). "Owing to a very light crop of apples and ideal weather conditions for codling-moth development the percentage of wormy and stung fruit is very high this season, running from 50 to 90 per cent. Practically no injury occurred after September 15. Uninterrupted ideal weather throughout the summer for moth development has resulted in three broods, the third much lighter than the other two."

HAG MOTH (Phobetrus pithecium S. & A.)

- Connecticut W.E.Britton (October 24). "This insect was found in Shelton, Guilford, and Greens Farms. Rather more abundant than in an average year."
- Georgia Oliver I. Snapp (October 5). "Some ornamental bushes on lawns of Fert Valley have been defoliated by larvae of the hag moth."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Massachusetts

B.A. Porter (September 25). "Not noted in this section Huntington and Chesterfield last year, and has probably reached this region within the last year or so. Now present in small numbers."

H.T. Fernald (October 20). "The apple and thorn skeletonizer has appeared at Amherst, and the moths were very abundant on October 16 to 19. Their work has been observed also, to some extent, but apparently is not abundant enough to account for the swarms of moths. Mr. Bennett A. Porter of Wallingford has suggested to me that it was very possibly a migrating flight northward from Connecticut."

A.G. Davis (September 15). "Have not noted any eating birch but it has been causing considerable damage to apple in Litchfield County."

W.E. Britton (September 16). "Commercial sprayed orchards not much injured, unsprayed trees now brown. Less destructive than last year in Greenwich and Stamford where the pest first appeared in the State. Not serious around Storrs (J.A. Manter). Not noticed around Rockville (E.E. Tucker)."

F.A. Bartlett (September 19). "Trees thoroughly sprayed in spring are in good condition with possibly a slight injury on the tips of the later growth at Stamford."

E.M. Ives (September 20). "One of the pronounced pests of late season in Meriden."

C.D. Clark, County Agent (September 21). "Reports this insect more prevalent than it was last year in the entire County of Fairfield."

G.H. Hollister (September). "I have not noticed that this insect is very general on apples at Windsor and Hartford."

Philip Garman (October 24). "Adult moths exceedingly numerous in September and October at New Haven."

FALL WEBWORM (Hyphantria cunea Drury)

Delaware

C.O. Houghton (September 1). "The status of this insect is about the same as during the average year."

FALSE APPLE RED BUG (Lygidea mendax Reut.)

Connecticut

F.A. Bartlett (September 19). "Never had so much trouble with red bug injury as this year, possibly due to the fact that there is a limited number of apples in this part of Fairfield County, and practically all knurled."

A LEAFHOPPER (species undetermined)

Oregon M-A-Yothers (October 11). "Greatest infestation of a leafhopper in the past five years since the winter has been here. Leaves of Newton apples have sickly appearance and fruit specked with leafhopper excrement. Increased in numbers up to October 1."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Illinois W.P.Flint (October 20). "Damage by this scale has been much more severe than usual throughout the southern Illinois orchard districts. Many orchards where the scale has been held under control for a number of years have had the fruit seriously damaged from spotting by the scale."

Oregon M-A-Yothers (October 11). "In a good many orchards the loss from this insect was from 5 to 15 per cent, even where spraying had been done. The insect is not general over the valley."

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

Connecticut W.H.Darrow (September 21). "Apparently one of the worst apple pests in Holland and New London Counties this year, being much worse than last year. Unsprayed apples damaged 100 per cent."

PEACH

A SAWFLY (Eriocampoides sp.)

Louisiana T.H.Jones (September 14). "Larvae of this sawfly causing noticeable amount of damage to leaves of peach trees in yards in Baton Rouge."

PEACH-TREE BORER (Aegeria exitiosa Say)

Georgia Oliver I. Snapp (October 19). "Thousands of pounds of paradichlorobenzene will be put out this week by Georgia peach growers for the peach borer. Many are taking chances on tree injury and using the material on young trees."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Georgia Oliver I. Snapp (October 9). "Adult bark-beetles have been feeding at the buds on peach twigs, causing exudation of gum. The attack has frequently been made on healthy trees, but generally on those near an old neglected orchard or strip of woodland."

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

Georgia Oliver I. Snapp (October 7). "The first adult of the third generation left the soil in the insectary today. This is believed to be the first record of third-generation adults of C. nemophar, being bred from peach. A large percentage of the adults in the field have now



entered hibernation quarters. Some of the adults that transform late in the season make no attempt to work their way out of the soil, and it is believed that these late beetles remain in their pupal cells during the winter and do not liberate themselves until spring."

BLUM

SNOWY TREE CRICKET (Oecanthus niveus DeG.)

Laho

Claude Wakeland (October 19). "The snowy tree cricket caused softening and rotting of pruned in a large commercial orchard at Parma. Decay starts in feeding punctures. Loss in orchard estimated last year 50 per cent, but has not been so severe this year owing, supposedly, to females being killed by early freeze last year before eggs were laid. Females are now heavy with eggs and are probably ovipositing."

ACHEMON SPHINX (Pholus achemon Drury)

Wisconsin

S.B.Fracker (August 10). "Damage slight but the large caterpillars attracted considerable attention."

BUMBLE FLOWER BEETLE (Euphoria inda L.)

Michigan

R.H.Pettit (September 27). "The bumble flower beetles are causing more trouble than usual this year in Michigan with ripening fruit."

GRAPE LEATHOPPER (Erythronaura comes Say)

Delaware

C.O.Houghton (August 1). "This insect is reported from Newark and is about the same as during an average year."

CITRUS

CITRUS WHITEFLY (Dialeurodes citri Ashm.)

Louisiana

T.H.Jones (October 16). "Adults, which had been abundant for some time previous, disappeared after cool spell beginning October 8."

A VOCADO WEEVIL (Heilipus perseae Barber)

Cal

ne

James Zetek (October 6). " Heilipus perseae Barber is one of the most serious pests of avocado fruit, and is more abundant than it was last year."

AVOCADO STENOMA (Stenoma catenifer Wals.)

Cal

ne

James Zetek (October 6). "One of the two most serious pests of avocado fruit; is very much more abundant this year than last."

TRUCK & CROP INSECTS

MISCELLANEOUS FEEDERS

A MYRIAPOD (Parajulus coeruleocinctus Wood)

New York C. R. Crosby (September 12). "Reported crawling into vegetables, boring in and doing a large amount of damage."

SALT-MARSH CATERPILLAR (Estigmene acrea Drury)

Delaware C. O. Houghton (September 22). "But few examples of this species have been observed here lately."

POTATO

FALSE CHINCH BUG (Nysius ericae Schill.)

Idaho Claude Wakeland (September 26). "All injury to potatoes from the false chinch bug apparently has ceased since the cooler weather, which has been accompanied by rain generally throughout the southeastern part of the State."

TARNISHED PLANT-BUG (Lycus pratensis L.)

Idaho Claude Wakeland (September 26). "The tarnished plant-bug injury to potatoes has apparently ceased since the cooler weather which has been accompanied by rain generally throughout the southeastern part of the State."

CABBAGE

CABBAGE SNAKE (Mermis sp.)

Indiana J. J. Davis (October 20). "The cabbage snake was first reported to us this year on September 30, attacking cabbage."

CABBAGE LOOPER (Autographa brassicae Riley)

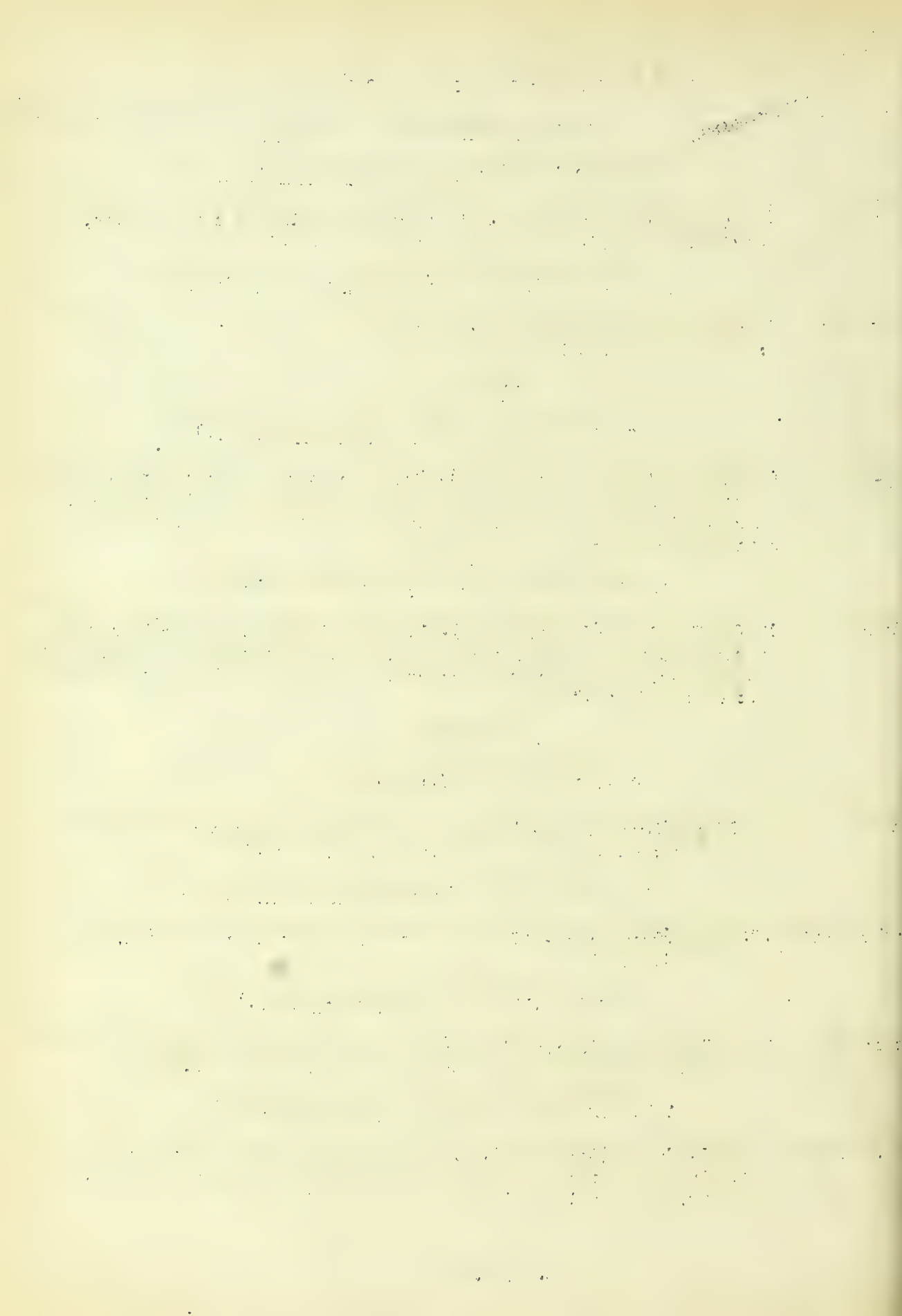
Connecticut M. P. Zappe (October 6). "This insect was reported from Hamden, New Haven County."

ZEBRA CATERPILLAR (Manestra picta Harr.)

Idaho Claude Wakeland (October 19). "The zebra caterpillar is attacking cabbage quite freely in truck gardens in Canyon County."

IMPORTED CABBAGE WORM (Pontia rapae L.)

Georgia Oliver I. Snapp (October 9). "The cabbage worms appear to be unusually abundant on late cabbage in gardens of central Georgia this year, and considerable damage has resulted."



PEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

- North Carolina Neale F. Howard (October 7). "A report has been received that the Mexican bean beetle has been found in Macon County."
- Neale F. Howard (October 21). "The Mexican bean beetle has been reported from Henderson, Jackson, and Transylvania Counties."
- Tennessee Neale F. Howard (September 25). "A report has been received that the Mexican bean beetle has been found in Claiborne County."
- Kentucky Neale F. Howard (September 30). "The Mexican bean beetle has been found in Allen, Barren, Hart, Metcalf, and Monroe Counties. Unmistakable feeding of this insect found in Hart County, but no stage of insect present at the time of inspection."
- Neale F. Howard (October 7). "Green, Hardin, Hart, Larue, and Taylor Counties report Mexican bean beetle infestation. In Hardin and Hart Counties the insect was not found, but evidence of feeding."
- Neale F. Howard (October 21). "The Mexican bean beetle has been found in Fayette, Franklin, Marion, Washington, and Woodford Counties."

PEAS

PEA APHID (Pisum apii Kalt.)

- Maryland C.C. Hamilton (September 26). "Nymphs abundant, stunting of growth of terminals, also curling beginning to show in some fields. Indications for considerable damage later. Some experimental dusting with nicotine dust, about 75 per cent killed. A few lady beetles and syrphids were also observed."

CUCUMBER

BANDED CUCUMBER BEETLE (Diabrotica balteata Lec.)

- Alabama & Mississippi K.L. Cockerham (October 17). "More serious damage than that caused by any Diabrotica of this section. This pest promises to become one of the chief truck-crop pests of the South."
- Louisiana T.H. Jones (October 16). "Adults of this species have continued to be noticeably abundant on various vegetable crops since the date of last report (September 15)."

MELONS

MELON APHID (Aphis gossypii Glover)

Nebraska M.H.Swenk (October 1). "In western Nebraska the melon aphid was normally destructive up to at least the middle of the month."

SQUASH

SQUASH BORER (Melittia satyriniformis Huebn.)

Nebraska M.H.Swenk (October 1). "The squash vine-borer was persistently reported as injuring squashes up to early September."

TURNIP

TURNIP APHID (Rhopalosiphum pseudobrassicae Davis)

Louisiana T.H.Jones (October 16). "Becoming noticeably abundant as it usually does at this time each year."

LETTUCE

ZEBRA CATERPILLAR (Mamestra picta Harr.)

Idaho Claude Wakeland (September 26). "Mamestra picta is injurious to a limited extent upon sugar beets and to a greater degree upon lettuce. It has been reported from Franklin County, Canyon County, and Bingham County."

CARROT BEETLE (Ligyrus gibbosus DeG.)

Idaho Claude Wakeland (September 26). "A pest which is proving to be of considerable importance in restricted localities in this State is the carrot beetle Ligyrus gibbosus DeG. It has been reported injurious to head lettuce in Canyon County. Reports coming from Mr. Don B. Whelan, extension entomologist, and farmers indicate that about one-third of the stand was destroyed in certain fields. Injury is caused by the adults eating off the main roots below the surface of the ground."

PEANUT

A PRIONID BEETLE (Homaesthesis sp.)

Louisiana T.H.Jones (September 8). "Larvae sent in with report that they were injuring peanuts in newly cut-over pine lands."



SOUTHERN FIELD CROP INSECTS

COTTON

COTTON WORM (Alabama argillacea Huabn)

Michigan R.H.Pettit (September 27). "This pest has recently appeared at South Haven, according to a report from Mr. Stanley Johnston, Superintendent of the Experiment Station."

BOLL WEEVIL (Anthonomus grandis Boh.)

Tennessee S.Marcovitch (October 19). "Larvae, pupae, and adults were discovered in an experimental patch of cotton on the grounds at Knoxville. This infestation shows the remarkable power of the boll weevil to spread, for the nearest cotton patch as far as is known is located at Madisonville, about 40 miles south."



FOREST AND SHADE - TREE INSECTS

GENERAL FEEDERS

FALL WEBWORM (Hyphantria cunea Drury)

Nebraska M. H. Swenk (October 1). "The threatened defoliation of shade trees by the last brood of the fall webworm did not develop with the expected severity."

FOREST TENT CATERPILLAR (Malacosoma disstria Huebn.)

Idaho J. C. Evenden. "Every shrub in northern Idaho was heavily attacked by this insect during the past season, an increase of 100 per cent."

LINDEN

HICKORY APHID (Longistigma carvae Harr.)

New York C. R. Crosby (August 11). "Infested specimens of basswood were received from Hamburg on this date."

SUGARBERRY TREE

BARNACLE SCALE (Ceroplastes cirripediformis Comst.)

Georgia O. I. Snapp (October 9). "This scale is killing many sugarberry trees used for shade purposes in the City of Columbus, Ga. Most of the infestations have reached the encrusted stage. Residents are making an effort to have the city authorities undertake control measures."

JUNIPER

JUNIPER WEBWORM (Ypsolophus marginellus Fab.)

Missouri L. Haseman (October 7). "Our attention has been called to only one infestation by this webworm in the State, but on some of the Irish junipers considerable damage has been done."

BIRCH

BIRCH LEAF-SKELETONIZER (Bucculatrix canadensisella Chamb.)

Wisconsin Simon Maloney (September 20). "This is said to be a new pest here. Birch leaves are skeletonized throughout northern Marinette County."

BOXELDER

BOXELDER PLANT-BUG (Leptocoris trivittatus Say)

Indiana J. J. Davis (October 20). "The boxelder bug was reported, September 29, from Linden, as a pest of considerable annoyance in houses."



C. N. Ainslie (October 11). "There has been a marked increase in the numbers of the boxelder bug during the past year and at this date the adults are swarming everywhere. Besides the damage they may do to trees they are a great nuisance, invading houses and colonizing in porches."

CATALPA

A MEALYBUG (Pseudococcus comstocki Kuw.)

York E. P. Felt (September 25). "Specimens just at hand indicate an unusual abundance of what is presumably the Japanese mealybug on catalpa, at North Pelham, Westchester County, the crevices of the bark and holes in the trees being more or less filled with a white, mealy material containing immense numbers of the minute, yellowish orange larvae."

ELM

ELM LEAF-BEETLE (Galerucella luteola Muell.)

Jersey C. E. Cobb (July 25). "This insect was found attacking elm at East Orange." (August 7). "Elm trees found to be attacked by this insect at Montclair."

ELM BORER (Saperda tridentata Oliv.)

aska M. H. Swenk (October 1). "Serious injury to elms and poplars by the elm borer continued through the month."

LARCH

LARCH CASE-BEARER (Coleophora laricella Huebn.)

ie H. B. Pierson (August). "Infestation by the larch case-bearer is assuming epidemic form. Large areas of larch appeared as if struck by fire early in the season."

MAPLE

A LEPIDOPTERON (Paraclemensia acerifoliella Fitch)

York E. P. Felt (September 23). "This insect has been locally abundant and somewhat injurious to sugar maples in both St. Lawrence and Warren Counties."

WOOLLY MAPLE-LEAF SCALE (Phenacoccus acericola King)

necticut W. E. Britton (October 24). "This insect is attacking sugar maples about Bristol, New London, Stratford, Glastonbury, and New Haven."

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Jersey C. E. Cobb (June 25). "This scale is attacking maples at Maplewood." (June 28). "It is also attacking maples at Westfield."



POPLAR

POPLAR BORER (Sanosyla calcarata Say)

Nebraska M. H. Swenk (October 1). "Serious injury to elms and poplars by the poplar borer continued through the month."

SPRUCE

SPRUCE BUDWORM (Harmolosa fumiferana Clem.)

Maine H. B. Pierson (July 1922). "The outbreak of this pest is waning, but was, undoubtedly, one of the most serious ever recorded in North America. The budworm was followed by bark-beetles and fungi. More than 33-1/3 per cent of fir and spruce trees damaged."

Nevada J. C. Evenden (June). "Large areas of forest land in the northern half of the State have been seriously injured during the past season by this insect."

PINE LEAF SCALE (Ilmenichionaspis pinifoliae Fitch)

Indiana J. J. Davis (October 20). "What was supposedly this insect has been reported as damaging spruce at Indianapolis and Fort Wayne."

WILLOW

IMPORTED POPLAR AND WILLOW BEETLE (Plagiodera versicolora Laich)

New Jersey C. E. Cobb (July 14). "Willows are being attacked by this beetle at Hillside."



GREENHOUSE AND ORNAMENTAL

PLANT INSECTS

MISCELLANEOUS FEEDERS

JAPANESE BEETLE (Popillia japonica Newm.)

New Jersey (Bur. Ent. News Letter No. 101, September). "Recent preliminary examinations for the presence of Japanese beetle larvae in fields in the vicinity of the laboratory show a heavy increase in the number of grubs compared with the number present a year ago this time, in some cases running as high as 100 per cent or more increase. It is expected that the regular grub survey to be made a little later in the fall will show a general increase in density of grub infestation throughout the infested territory as a whole."

"A serious injury to a number of the greens in local golf courses, as a result of the abundance of Japanese beetle larvae, has been found. The greens offer ideal facilities for egg depositions by the beetle during the season, and it is quite apparent that the effect of these heavy egg depositions will be serious, possibly necessitating the rebuilding of infested greens."

COTTON MEALYBUG (Pseudococcus citri Risso)

Indiana J. J. Davis (October 20). "The usual numerous fall reports of mealybugs on coleus and other house and garden plants have been received the past month."

COSMOS WEEVIL (Boris confinis Lec.)

Michigan C. A. Weigel (October 2). "Report on cosmos weevil was received from Detroit as attacking roots and top of stalks of helenium, eventually destroying the entire top of the plant if not checked."

A STALK-BORER (Papaipema sp.)

Ohio C. A. Weigel (October 2). "This insect is reported from Columbus as seriously injuring Delphinium belladonna."

MARGUERITE FLY (Agromyza maculosa Mall.)

Pennsylvania C. A. Weigel (October 2). "Report on Agromyza maculosa (Malloch) as a very serious pest in greenhouses at Parker Ford, Pa. Specimens of leaves were sent in with dead spots, each spot containing one or more little worms which had eaten between the two layers of leaf."

ASTERS

A KATYDID (Microcentrum sp.)

Pennsylvania C. A. Weigel (October 2). "Record of this species occurring in Reading, Pa., as attacking asters. Received specimen of aster stem which was infested with eggs of katydid."

FERN

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

Louisiana T. H. Jones (October 10). "Specimens of maidenhair fern were sent in from Alexandria, La., with request for remedy."

FERN CATERPILLAR (Callopistria floridensis Guenee)

Louisiana T. H. Jones (October 12). "Larvae were sent in from Donaldsonville, La., with request for information as to control. What is probably this species has also been reported as causing injury to ferns in Baton Rouge."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL-FLY (Diarthronomyia hypogaea L.)

Illinois C. C. Compton (September 29). "This gall-fly is causing severe injury to chrysanthemums in one greenhouse at Aurora. This insect was brought in on a shipment of chrysanthemums from Lincoln, Ill."

Mississippi D. W. Grimes (Quarterly Bulletin State Plant Board, Vol. 2, April to July, 1922, Nos. 1-2). "Specimens of chrysanthemums severely infested with the chrysanthemum gall midge were recently received from two greenhouses in Mississippi. In both cases the plants had been purchased originally from firms in Illinois. A few days later five infested shipments from Pennsylvania were intercepted. This is the first recorded occurrence of this pest in this State."

SPITTLE INSECTS (Cercopidae)

Mississippi K. L. Cockerham (October 16). "These insects were on practically every stem of a patch of chrysanthemums in Biloxi. Considerable damage is being done."

CYCLAMEN

CYCLAMEN MITE (Tarsonemus pallidus Banks)

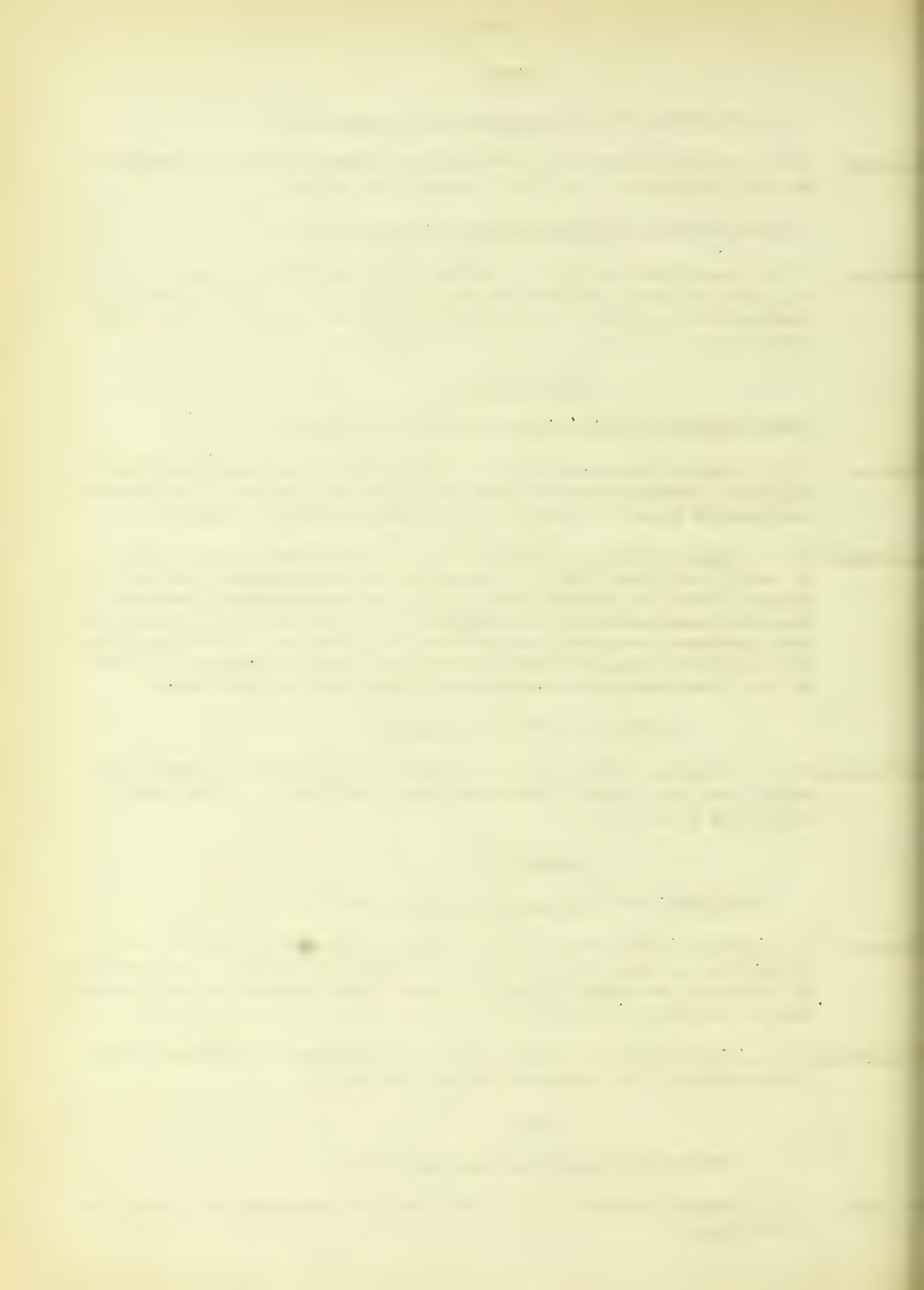
Illinois C. A. Weigel (October 2). "Reports of this mite from different localities in this State were received." (October 30) "An individual in Oak Park lost about 10,000 cyclamen plants during the past summer due to the injuries of this pest."

Pennsylvania C. A. Weigel (October 30). "This pest was recently reported from Philadelphia, Pa., as injuring snapdragons."

IVY

IVY SCALE (Aspidiotus hederæ Vallot)

New York C. R. Crosby (August 31). "This scale is infesting ivy about New York City."



MAGNOLIA

MAGNOLIA SCALE (Neolecanium cornuparvum Thos.)

New York C. R. Crosby (August 17). "Infested specimens of magnolia were received from Mt. Vernon."

ROSE

A LEAFHOPPER (Graphocephala coccinea Forst.)

Nebraska M. H. Swenk (October 1). "In Lancaster County, during the middle of September, there was some injury to rose foliage by this leafhopper."

ROSE MIDGE (Dasyneura rhodophaga Coq.)

Virginia,
New York, and C. A. Weigel (October 30). "Reports have been received recently from these States of serious injuries due to the rose midge, Dasyneura rhodophaga (Coq.)."

ORCHID

ORCHID FLY (Eurytoma (Isosoma) orchidearum Westw.)

Missouri C. A. Weigel (October 30). "This pest is reported from St. Joseph."
Massachusetts C. A. Weigel (October 30). "This pest is reported from Nahant, Mass., as doing serious injury to orchids."

1. The first part of the paper is devoted to a general

discussion of the problem and the methods used in the

present

work. The second part is devoted to a detailed

analysis of the results obtained in the

present work. The third part is devoted to a

discussion of the results obtained in the present work and

conclusions

1. The first part of the paper is devoted to a general

discussion of the problem and the methods used in the

INSECTS INFESTING DOMESTIC ANIMALS

HORN FLY (Haematobia irritans L.)

exas F. C. Bishopp (October 28). "Horn flies have not given the usual amount of trouble to dairy and range stock this fall owing to continued dry weather. The average number of flies per animal on dairy herds in the vicinity of Dallas ranges from 10 to 300."

HORSE BOT-FLY (Gastrophilus intestinalis DeG.)

exas F. C. Bishopp (October 28). "This fly has increased in numbers materially during September and is still depositing eggs in great numbers at this date."

aryland J. A. Hyslop. "This insect has been more troublesome this year than during the past three years in southeastern Montgomery County. Clipping of the eggs from horses was necessary up to the middle of October."

NOSE BOT-FLY (Gastrophilus nasalis L.)

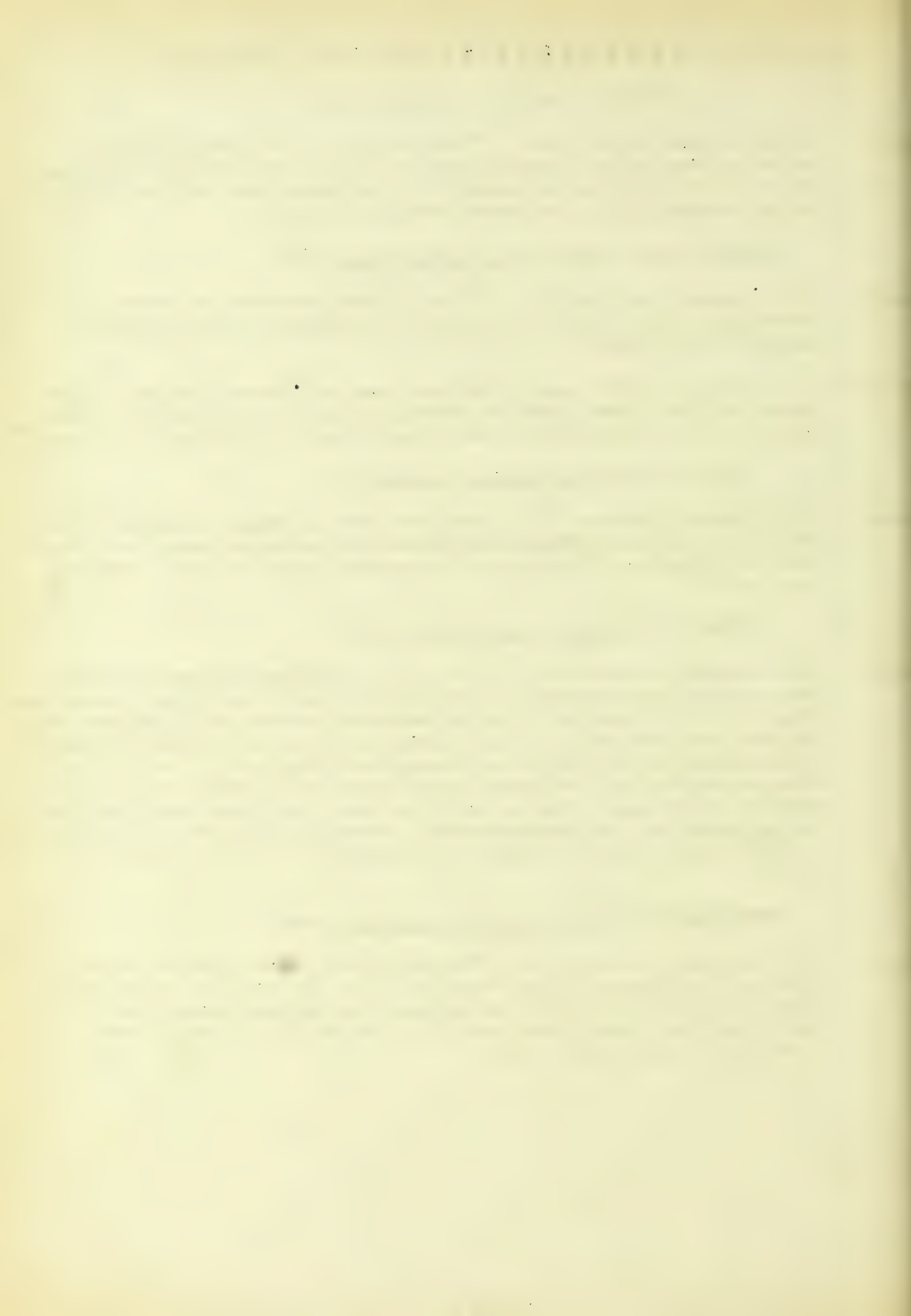
exas F. C. Bishopp (October 28). "The nose botfly began to appear in the vicinity of Dallas in August and became very numerous toward the latter part of September. They are still annoying horses to some extent on this date."

SCREWORM (Chrysomya macellaria Fab.)

exas F. C. Bishopp (October 28). "Mr. D. C. Parman reports comparatively few cases of the screwworm in live stock in Uvalde and adjacent counties. There were more cases in September and early October following shearing of sheep and goats in the hilly country north of Uvalde than with many other classes of live stock on the ranges to the south. Mr. O. G. Babcock reports very few cases of the screwworm in Sutton and adjoining counties this fall. This is due to drought, the flies being practically killed out during the summer months. Screwworm flies are comparatively scarce in the vicinity of Dallas, and cases of screwworm injury very few."

BROWN DOG TICK (Rhipicephalus sanguineus Latr.)

exas F. C. Bishopp (October 28). "This very troublesome pest was found for the first time in Dallas this fall. It was not known heretofore north of San Antonio. In this instance the infested animal was introduced from South Texas several months ago and the ticks have been thriving and multiplying here."



INSECTS INFESTING HOUSES AND PREMISES

WHITE ANTS (Reticulitermes flavipes Kol.)

Liana J. J. Davis (October 20). "Injury to woodwork in a dwelling by white ants was reported October 10 from Peru, the northernmost point reporting injury. The white ant is an annual pest in the southern end of the State."

BOOKLOUSE (Atropos divinatoria Muell.)

Liana J. J. Davis (October 20). "Booklice are frequently reported. One report from Clinton on September 21 records a heavy infestation in a hair mattress and furniture."

aska N. H. Swenk (October 21). "Excepting for last fall, stored-grain pests are more numerous in the farm granaries and small elevators of Nebraska this fall than for any time during the past fifteen years. In some cases the infestation includes psocids."

ARGENTINE ANT (Iridomyrmex humilis Mayr)

as F. C. Bishopp (October 28). "A rough survey of the area in the city of Dallas infested by the Argentine ant was made during September. There are now five different areas infested, totalling about 114 blocks. A rough survey made in 1916 showed that at that time there were at least 40 blocks infested."

HOUSE FLIES (Musca domestica L.)

is F. C. Bishopp (October 28). "House flies have increased considerably during late September and October, but they are less numerous than usual. This is probably due to the protracted summer drought."

YELLOW-FEVER MOSQUITO (Aedes aegypti L.)

Liana T. H. Jones. "The Louisiana State Board of Health reported, up to October 21, 3,892 cases, with the number of infested areas placed at 40." (The cases referred to are of dengue fever).

as F. C. Bishopp (October 28). "While this mosquito was apparently no more numerous than usual, much attention was attracted to it by the unprecedented outbreak of dengue fever which swept the South. The epidemic began in the cities of North Texas early in August and reached its height about September 15. Many cases continued to occur through September and October, although the number of cases reported to the Health Department dropped off during the latter month. During August the number of cases reported in Dallas was 54, in September 2,882, and in October 540. At least three deaths due to dengue with complications have occurred in Dallas. The disease is no more severe in Dallas than in any other Texas cities; Galveston, Houston, Waco, and Ft. Worth each had several thousand cases."



THE INSECT PEST SURVEY BULLETIN

A periodical review of entomological conditions throughout the United States,
issued monthly from March to October inclusive.

Volume 2

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BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING

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THE UNIVERSITY OF CHICAGO

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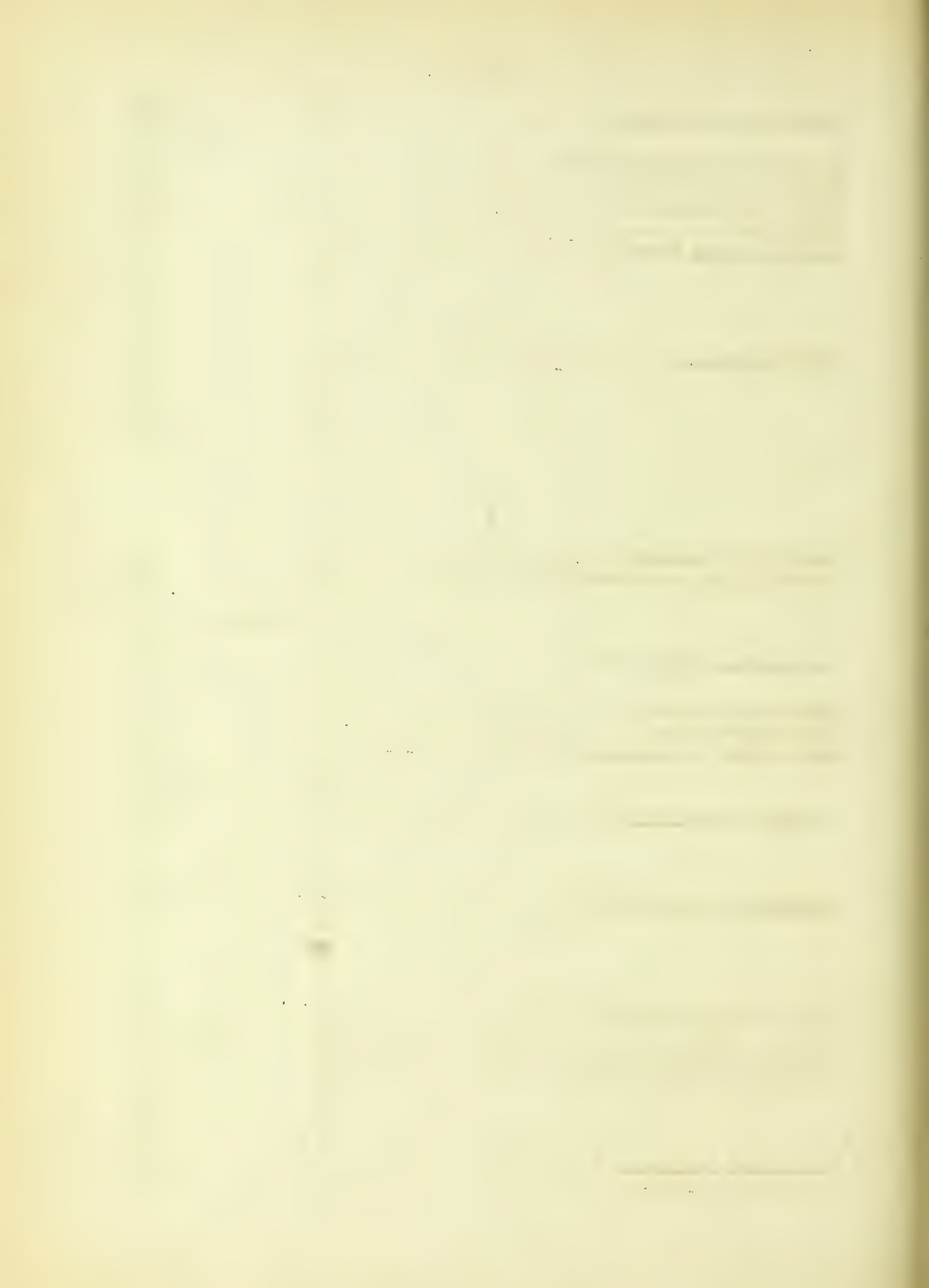
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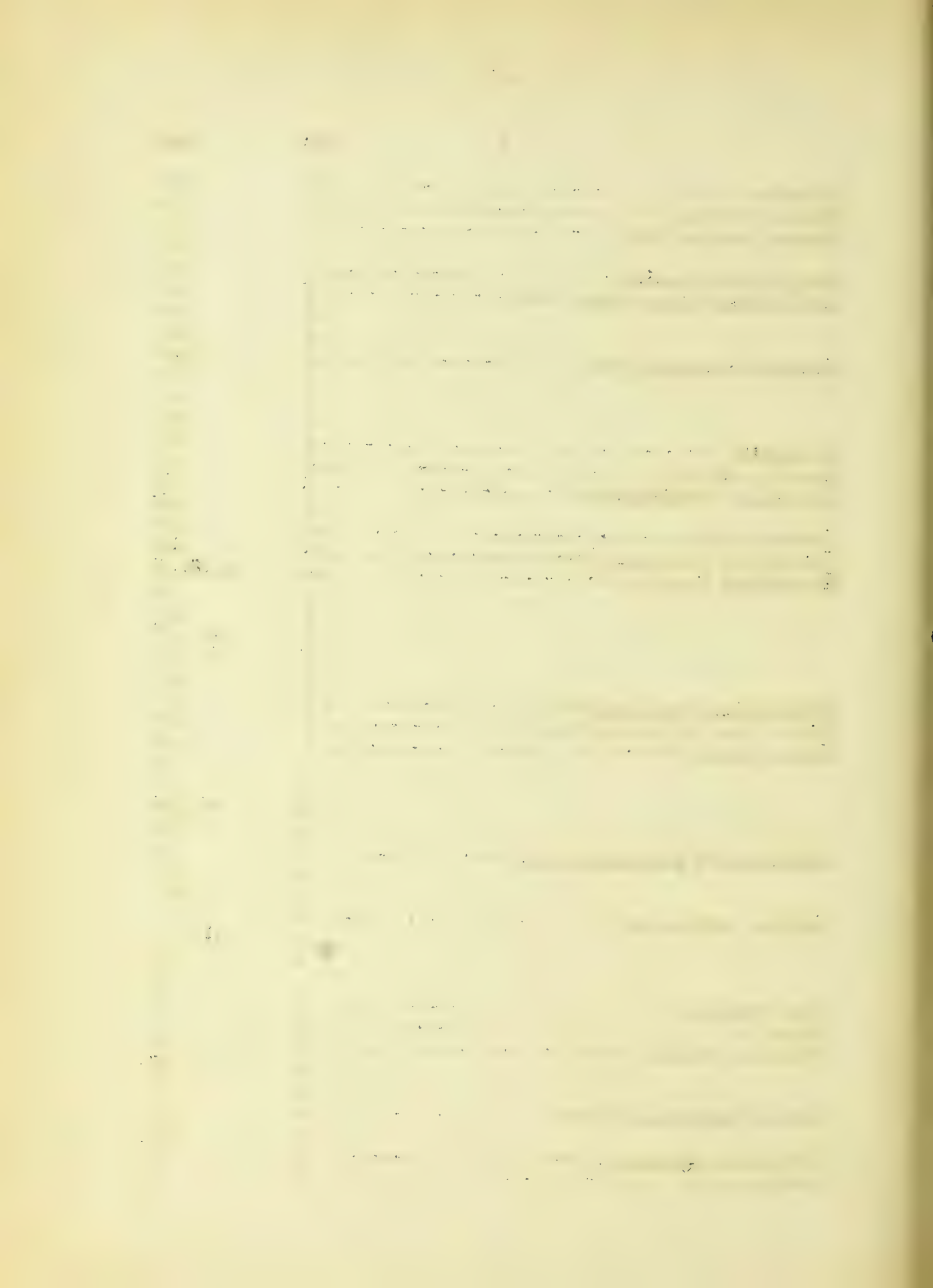
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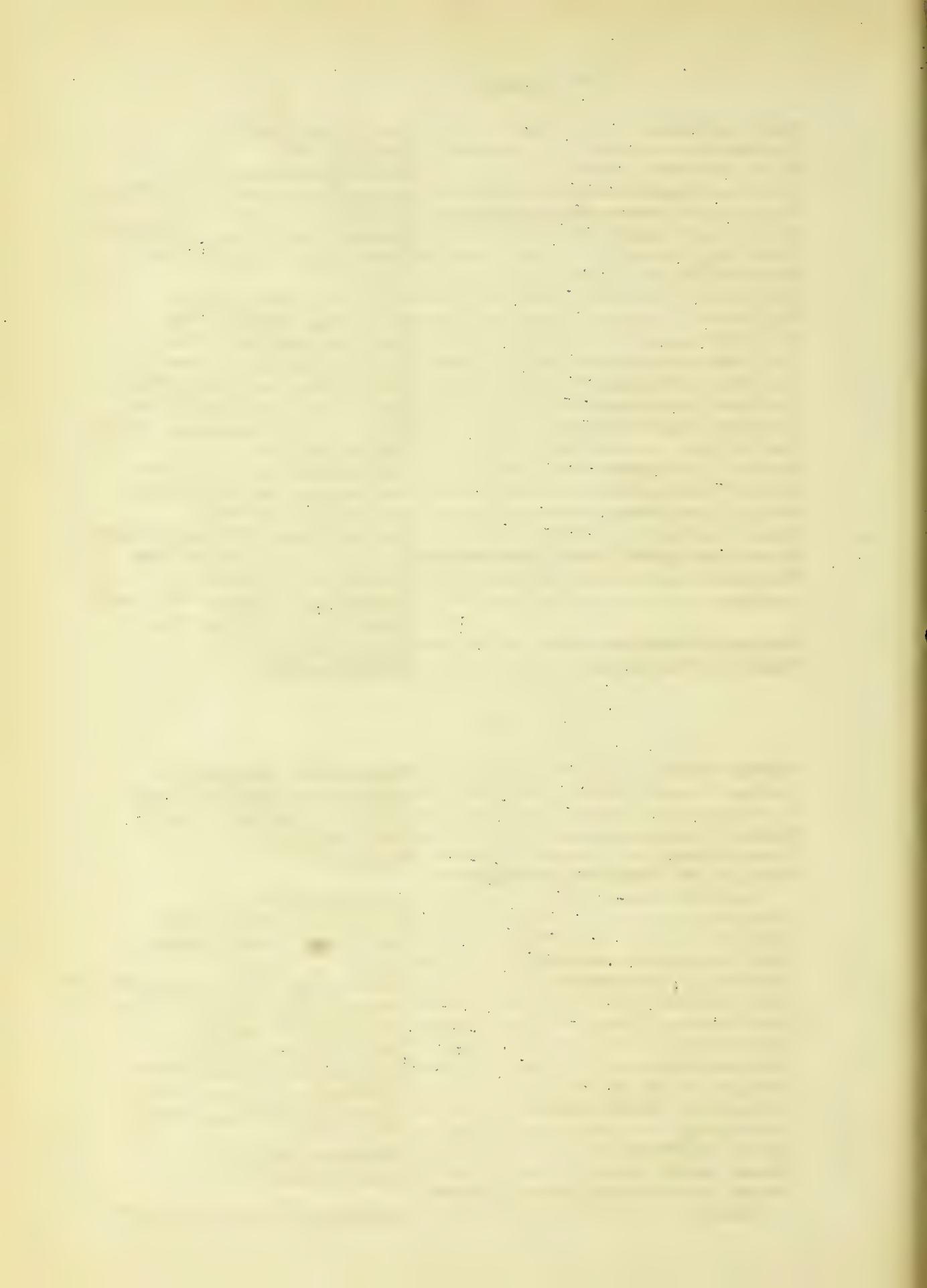


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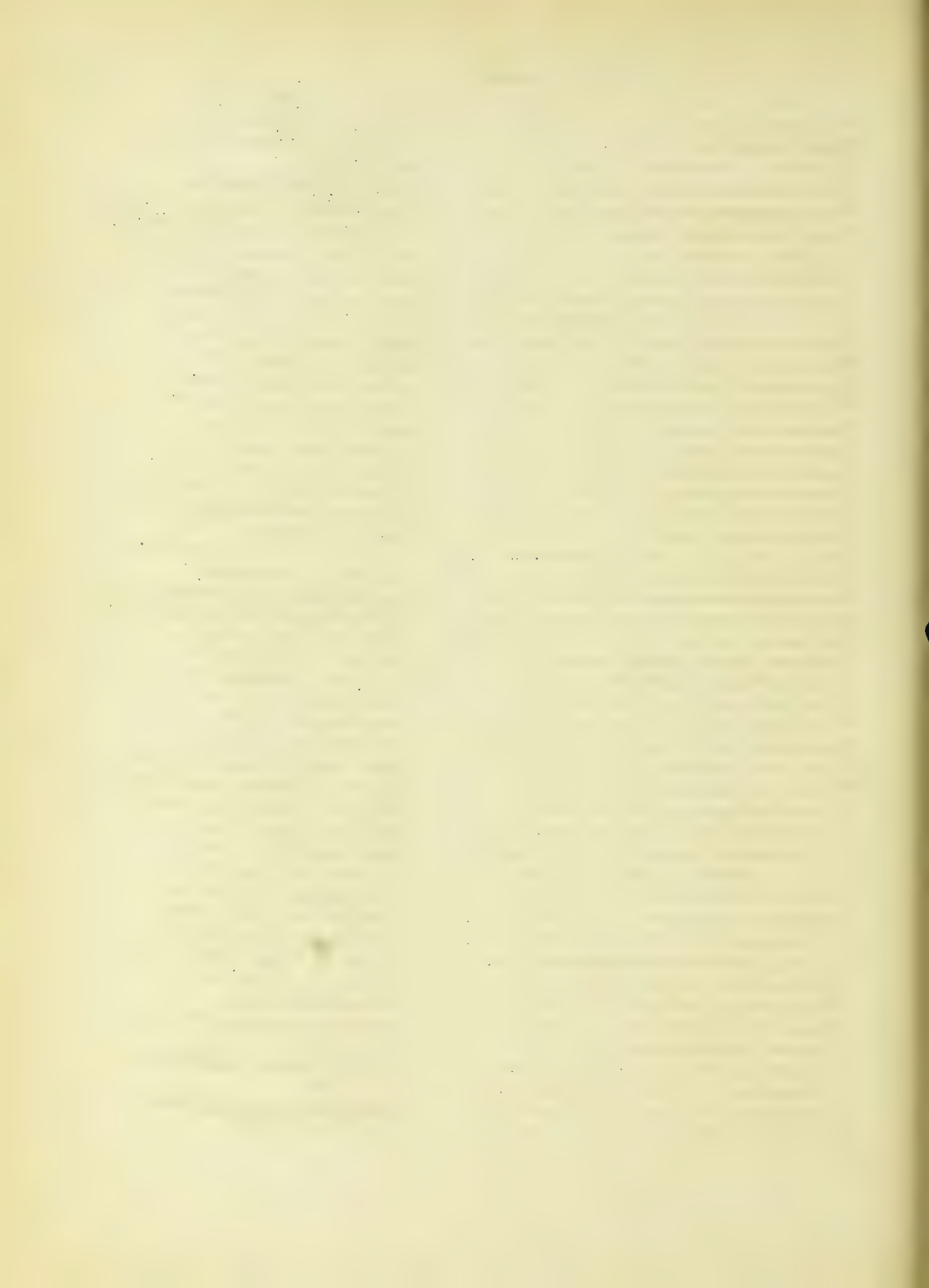
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	See
Cherry-fruit sawfly - - - - -	<u>Hoplocampa cookei</u> Clarke
Cherry scale a.n.o. - - - - -	<u>Aspidiotus forbesi</u> Johns.
Chiggers - - - - -	<u>Trombidium</u> sp.
Chinch bug a.n.o. - - - - -	<u>Blissus leuconterus</u> Say
Chrysanthemum gall-midge - - - - -	<u>Diarthronomyia hypogaea</u> F.Loew.
Cigar case-bearer a.n.o. - - - - -	<u>Coleophora fletcherella</u> Fern.
Cigarette beetle a.n.o. - - - - -	<u>Lasioderma serricornis</u> Fab.
Citrus blackfly a.n.o. - - - - -	<u>Aleurocanthus woglumi</u> Ashby
Citrus mealybug a.n.o.(common mealybug)-	<u>Pseudococcus citri</u> Risso
Citrus thrips (orange thrips a.n.o.)- -	<u>Scirtothrips citri</u> Moulton
Citrus whitefly a.n.o. - - - - -	<u>Dialeurodes citri</u> Ashm.
Clavate tortoise-beetle - - - - -	<u>Deloyala clavata</u> Fab.
Clay-backed cutworm - - - - -	<u>Feltia gladiaria</u> Morr.
Clear-winged grasshopper - - - - -	<u>Cannula pellucida</u> Scudd.
Clover-leaf weevil - - - - -	<u>Hypera punctata</u> Fab.
Clover mite a.n.o. - - - - -	<u>Bryobia practiosa</u> Koch.
Clover root-borer a.n.o. - - - - -	<u>Hylastinus obscurus</u> Marsh.
Clover-root curculio - - - - -	<u>Sitona hispidulus</u> Fab.
Clover-seed midge - - - - -	<u>Dasyneura leguminicola</u> Lintn.
Cockscomb elm gall - - - - -	<u>Colopha ulmicola</u> Fitch
Coconut scale - - - - -	<u>Aspidiotus destructor</u> Sign.
Codling moth a.n.o. - - - - -	<u>Carpocapsa pomonella</u> L.
Colorado potato beetle a.n.o. - - - - -	<u>Lentiniotarsa decemlineata</u> Say
Columbine borer - - - - -	<u>Panaspis purpurifascia</u> G.& R.
Conchuela - - - - -	<u>Pontatoma ligata</u> Say
Confused flour beetle - - - - -	<u>Tribolium confusum</u> Duv.
Corn earworm (bollworm a.n.o.) - - - - -	<u>Heliothis obsoleta</u> Fab.
Corn lanternfly - - - - -	<u>Peregrinus maidis</u> Ashm.
Corn-leaf aphid - - - - -	<u>Aphis maidis</u> Fitch
Corn-leaf blotch-miner - - - - -	<u>Agromyza parvicornis</u> Loew.
Corn-root aphid a.n.o. - - - - -	<u>Aphis maidi-radici</u> Forbes
Corn-root webworm - - - - -	<u>Crambus caliginosellus</u> Clem.
Corn-silk beetle - - - - -	<u>Luperodes varicornis</u> Lec.
Cosmos weevil - - - - -	<u>Baris confinis</u> Lec.
Cotton aphid a.n.o. - - - - -	<u>Aphis gossypii</u> Glov.
Cotton cutworm - - - - -	<u>Prodenia ornithogalli</u> Guen.
Cotton red-spider - - - - -	<u>Tetranychus telarius</u> L.
Cotton square-borer - - - - -	<u>Uranotes melinus</u> Huebn.
Cottonworm - - - - -	<u>Alabama argillacea</u> Huebn.
Cottony-cushion scale a.n.o. - - - - -	<u>Icerya purchasi</u> Mask.
Cottony-maple scale a.n.o. - - - - -	<u>Pulvinaria vitis</u> L.
Cowpea curculio - - - - -	<u>Chalcodermus aeneus</u> Boh.
Cranberry-tip maggot - - - - -	<u>Dasyncura vaccinii</u> Smith
Currant aphid a.n.o. - - - - -	<u>Myzus ribis</u> L.
Currant borer a.n.o. - - - - -	<u>Aegeria tipuliformis</u> Clerck
Cutworms - - - - -	Noctuidae
Cyclamen mite - - - - -	<u>Tarsonemus pallidus</u> Banks
Cyclamen weevil - - - - -	Black vine weevil



D

See

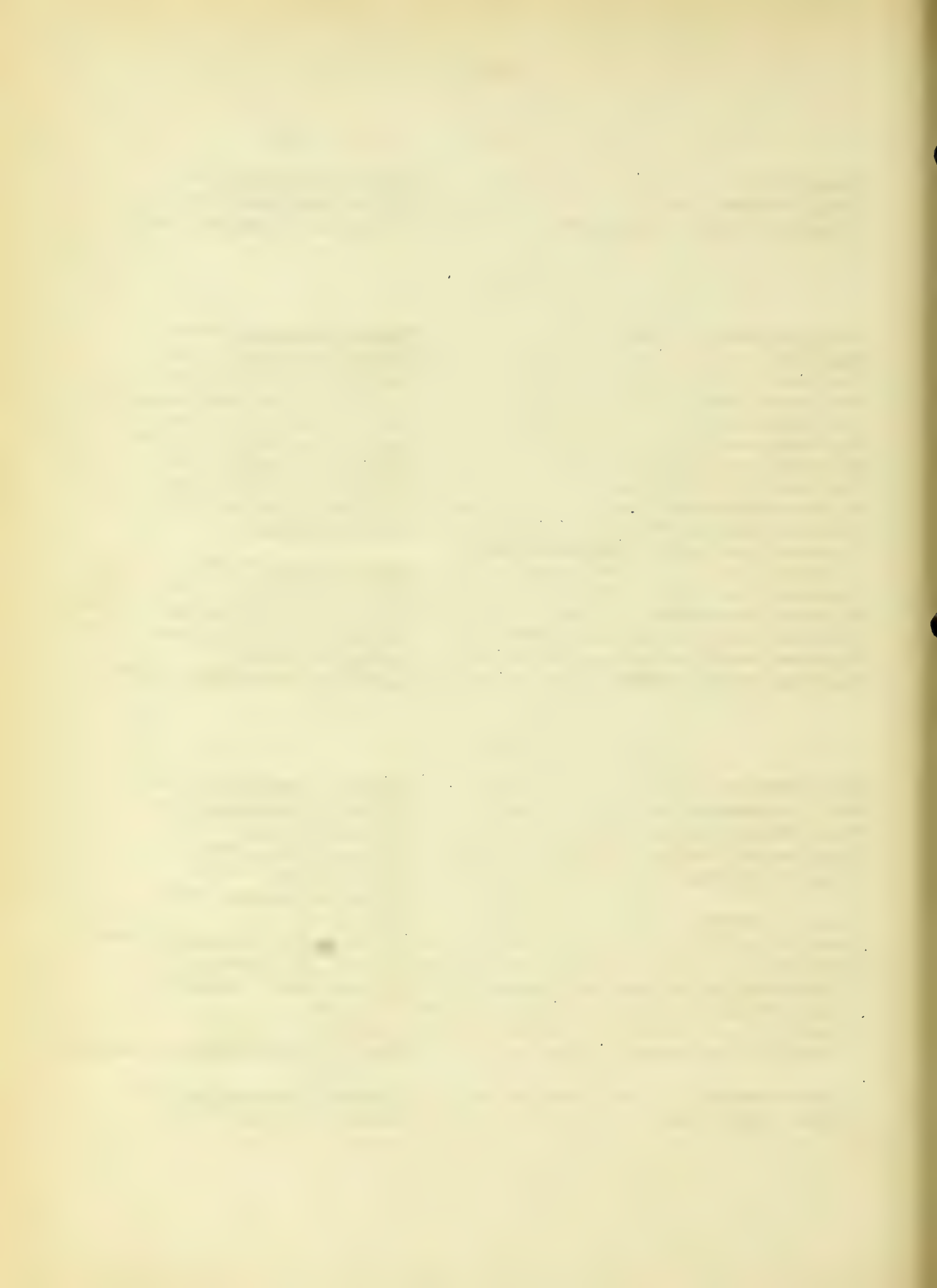
Death watch - - - - - Anobium striatum Oliv.
Dingy cutworm a.n.o. - - - - - Feltia subgothica Haw.
Douglas-fir tent-caterpillar - - - - - Euschausia argentata Pack.

E

Early strawberry slug - - - - - Empria fragariae Rohwer
Ear mite - - - - - Otodectes cymotis Hering
Elm borer a.n.o. - - - - - Saperda tridentata Oliv.
Elm case-bearer a.n.o. - - - - - Coleophora limosipennella Dup.
Elm leaf-beetle - - - - - Galcrucella luteola Muell.
Elm spanworm a.n.o. - - - - - Ennomos subsignarius Huebn.
Euonymus scale a.n.o. - - - - - Chionopsis euonymi Comst.
European corn borer a.n.o. - - - - - Pyrausta nubilalis Huebn.
European-elm scale a.n.o. - - - - - Gossyparia spuria Modeer
European grain moth - - - - - Tinea granella L.
European pine sawfly (imported pine
sawfly) - - - - - Diprion simile Hartig
European pine-shoot moth - - - - - Evetria buoliana Schiff.
European red-spider - - - - - Paratetranychus pilosus C. & F.
European web-spinning red-spider - - - - - Paratetranychus uniunguis Jacob
European wheat sawfly - - - - - Cephus pygmaeus L.
European willow beetle - - - - - Plagiodera versicolora Laich.

F

Fall armyworm a.n.o. - - - - - Laphygma frugiperda S. & A.
Fall cankerworm a.n.o. - - - - - Alsophila pometaria Harr.
Fall webworm a.n.o. - - - - - Hyalantria cunea Drury
False apple red-bug - - - - - Lygidea mendax Reut.
False chinch-bug - - - - - Nyzius ericae Schill.
False wireworm - - - - - Nyzius angustatus Uhler
False wireworm - - - - - Eleodes spp.
Fern caterpillar - - - - - Callonistria floridensis Guen.
Fire ant - - - - - Solenopsis geminata Fab.
Flat-headed apple-tree borer a.n.o. - - - - - Chrysobothris femorata Oliv.
Flea-beetles - - - - - Halticinae
Fleas - - - - - Siphonaptera
Florida flower thrips - - - - - Frankliniella bispinosus projectus
Watson
Flower-beetle, A - - - - - Euphoria sepulchralis Fab.
Flower thrips a.n.o. - - - - - Euthrips tritici Fitch



	<u>See</u>
Foreign grain beetle - - - - -	<u>Cathartus advena</u> Waltl.
Forest tent-caterpillar a.n.o. - - - - -	<u>Malacosoma disstria</u> Huebn.
Four-lined plant-bug - - - - -	<u>Poecilocapsus lineatus</u> Fab.
Fowl tick - - - - -	<u>Argas miniatus</u> Koch
Frit-flies - - - - -	<u>Oscinis</u> spp.
Fruit-tree leaf-roller - - - - -	<u>Cacoecia argyrospila</u> Walk.
Fruit-tree leaf syneta - - - - -	<u>Syneta albida</u> Lec.

G

Garden slug - - - - -	<u>Agriolimax agrestis</u> L.
Garden springtail - - - - -	<u>Sminthurus hortensis</u> Fitch
Garden webworm a.n.o. - - - - -	<u>Loxostege similalis</u> Guen.
Gipsy moth - - - - -	<u>Porthetria dispar</u> L.
Gooseberry fruitworm a.n.o. - - - - -	<u>Zophodia grossulariae</u> Pack.
Granary weevil a.n.o. - - - - -	<u>Calendra granaria</u> L.
Grape-berry moth a.n.o. - - - - -	<u>Polychrosis viteana</u> Clem.
Grape blossom midge - - - - -	<u>Contarinia johnsoni</u> Sling.
Grape-cane gall-maker - - - - -	<u>Ampelogypter sesostris</u> Lec.
Grape colaspis a.n.o. - - - - -	<u>Colaspis brunnea</u> Fab.
Grape curculio a.n.o. - - - - -	<u>Craonius inaequalis</u> Say
Grape flea-beetle a.n.o. - - - - -	<u>Haltica chalybea</u> Ill.
Grape leaf-folder a.n.o. - - - - -	<u>Desmia funeralis</u> Huebn.
Grape leafhopper - - - - -	<u>Erythroneura comes</u> Say
Grape phylloxera - - - - -	<u>Phylloxera vitifoliae</u> Fitch
Grape plume moth a.n.o. - - - - -	<u>Oxyptilus periscelidactylus</u> Fitch
Grape rootworm a.n.o. - - - - -	<u>Fidia viticida</u> Walsh
Grape tip-girdler - - - - -	<u>Ampelogypter ater</u> Lec.
Grapevine epimenis - - - - -	<u>Psychomorpha epimenis</u> Drury
Grapevine tomato-gall - - - - -	<u>Lasioptera vitis</u> O.S.
Grasshoppers - - - - -	Acridiidae
Grass maggot - - - - -	<u>Sciara sciophila</u> Loew
Greasy cutworm - - - - -	<u>Agrotis ypsilon</u> Rott.
Great-plains false wireworm - - - - -	<u>Eleodes opaca</u> Say
Greater wheat-stem maggot - - - - -	<u>Meromyza americana</u> Fitch
Green apple aphid (apple aphid a.n.o.) - - - - -	<u>Aphis pomi</u> DeG.
Green bug - - - - -	<u>Toxoptera graminum</u> Rond.
Green cloverworm - - - - -	<u>Plathypena scabra</u> Fab.
Green fruitworm a.n.o. - - - - -	<u>Xylina antennata</u> Walk.
Green peach aphid a.n.o. - - - - -	<u>Myzus persicae</u> Sulz.
Green soldier-bug - - - - -	<u>Nezara hilariis</u> Fitch
Greenhouse thrips a.n.o. - - - - -	<u>Heliothrips haemorrhoidalis</u> Bouche
Greenhouse whitefly a.n.o. - - - - -	<u>Trialeurodes vaporariorum</u> Westw.

H

Hag moth a.n.o. - - - - -	<u>Phobetron pithecium</u> S. & A.
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See

Harlequin cabbage bug a.n.o. - - - - -	<u>Murgantia histrionica</u> Hahn
Hemispherical scale a.n.o. - - - - -	<u>Saissetia hemisphaerica</u> Targ.
Hessian fly a.n.o. - - - - -	<u>Phytophaga destructor</u> Say
Hickory aphid - - - - -	<u>Longistigma caryae</u> Harr.
Hickory bark-beetle a.n.o. - - - - -	<u>Scolytus quadrispinosus</u> Say
Horse bot-fly - - - - -	<u>Gastrophilus intestinalis</u> DeG.
Horse-flies - - - - -	- <u>Tabanidae</u>
Horseradish flea-beetle - - - - -	- <u>Phyllotreta armoraciana</u> Koch
Horn fly - - - - -	- <u>Haematobia irritans</u> L.
Hornworms - - - - -	- <u>Protoparce</u> spp.
House fly a.n.o. - - - - -	- <u>Musca domestica</u> L.

I

Imported cabbageworm a.n.o. - - - - -	- <u>Pontia rapae</u> L.
Imported currant borer - - - - -	- <u>Aegeria tipuliformis</u> Clerck
Imported currantworm a.n.o. - - - - -	- <u>Pteronidea ribesi</u> Scop.
Imported poplar and willow beetle - - - - -	- <u>Plagiodera versicolora</u> Laich.
Indian-meal moth a.n.o. - - - - -	- <u>Plodia interpunctella</u> Huebn.
Interrupted cottonwood leaf-beetle - - - - -	- <u>Lina lapponica</u> L.
Iris borer - - - - -	- <u>Macronoctua onusta</u> Grote
Ivy scale - - - - -	- <u>Aspidiotus hederæ</u> Vallet

J

Japanese beetle - - - - -	- <u>Popillia japonica</u> Newm.
Jointworm - - - - -	- <u>Harmolita tritici</u> Fitch
Juniper webworm - - - - -	- <u>Ypsolophus marginellus</u> Fab.

L

Larch case-bearer a.n.o. - - - - -	- <u>Coleophora laricella</u> Huebn.
Larch sawfly - - - - -	- <u>Nematus crichsonii</u> Hartig
Larder beetle a.n.o. - - - - -	- <u>Dermestes lardarius</u> L.
Leaf crumpler a.n.o. - - - - -	- <u>Mineola indigenella</u> Zell.
Leaf-footed plant-bug - - - - -	- <u>Leptoglossus phyllopus</u> L.
Lesser bud-moth - - - - -	- <u>Recurvaria nanella</u> Huebn.
Lesser canna leaf-roller - - - - -	- <u>Nymphula cannalis</u> Quaint.
Lesser clover-leaf weevil - - - - -	- <u>Phytonomus nigrirostris</u> Fab.
Lesser corn stalk-borer - - - - -	- <u>Elasmopalpus lignosellus</u> Zell.
Lesser migratory grasshopper - - - - -	- <u>Melanoplus atlantis</u> Riley
Lesser peach-tree borer - - - - -	- <u>Aegeria pictipes</u> G. & R.
Lilac borer a.n.o. - - - - -	- <u>Podosesia syringae</u> Harr.
Locust borer a.n.o. - - - - -	- <u>Cyllene robiniae</u> Forst.

	<u>See</u>
Locust leaf-miner - - - - -	<u>Chalepus dorsalis</u> Thunb.
Long rose gall - - - - -	<u>Rhodites dichlocerus</u> Harr.
Lubber grasshopper - - - - -	<u>Dictyophorus reticulatus</u> Thumb.

M

Magnolia scale a.n.o. - - - - -	<u>Neolecanium cornuparvum</u> Thos.
Maple borer - - - - -	<u>Glycobius speciosus</u> Say
Maple chaitophorus - - - - -	<u>Periphyllus lyronicta</u> Kies.
Maple sesian - - - - -	<u>Sesia acerni</u> Clem.
March flies - - - - -	<u>Bibio</u> spp.
Marguerite fly - - - - -	<u>Agromyza maculosa</u> Mall.
Marguerite leaf-miner - - - - -	<u>Phytomyza chrysanthemi</u> Kowarz
Meal snout-moth - - - - -	<u>Pyralis farinalis</u> L.
Mealybug - - - - -	<u>Pseudococcus</u> sp. <u>P. comstocki</u> Kuwana
Mediterranean flour moth a.n.o. - - - - -	<u>Ephestia kuehniella</u> Zell.
Melon aphid - - - - -	<u>Aphis gossypii</u> Glov.
Mexican bean beetle - - - - -	<u>Epilachna corrupta</u> Muls.
Mexican fruit-fly - - - - -	<u>Anastrepha ludens</u> Loew
Mites - - - - -	<u>Rhizoglyphus</u> spp.
Mormon cricket - - - - -	<u>Anabrus simplex</u> Hald.
Mosquitoes - - - - -	Culicidae
Mottled malarial mosquito - - - - -	<u>Anopheles punctipennis</u> Say
Mountain-pine beetle a.n.o. - - - - -	<u>Dendroctonus monticolae</u> Hopk.
Myriapods - - - - -	Geophilidae <u>Julus</u> sp.

N

Nose bot-fly - - - - -	<u>Gastrophilus nasalis</u> L.
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O

Oak lace-bug - - - - -	<u>Corythucha arcuata</u> Say
Oak pruner - - - - -	<u>Elaeagnidion villosus</u> Fab.
Oblique-banded leaf-roller - - - - -	<u>Cacoecia rosaceana</u> Harr.
Obscure scale - - - - -	<u>Chrysomphalus obscurus</u> Comst.
Onion maggot a.n.o. - - - - -	<u>Hylemyia antiqua</u> Meig.
Onion thrips a.n.o. - - - - -	<u>Thrips tabaci</u> Lind.
Orange-striped oakworm - - - - -	<u>Anisota senatoria</u> A. & S.
Orchid fly (orchid chalcid) - - - - -	<u>Eurytoma (Isosoma) orchidearum</u> Westw.
Oriental peach moth a.n.o. - - - - -	<u>Laspeyresia molesta</u> Busck

See

Oriental roach - - - - -	<u>Blatta orientalis</u> L.
Ox warble - - - - -	<u>Hypoderma lineatum</u> DeVill.
	<u>H. bovis</u> DeG.
Oyster-shell scale a.n.o. - - - - -	<u>Lepidosaphes ulmi</u> L.

P

Pale western cutworm - - - - -	<u>Porosagrotis orthogonia</u> Morr.
Pales weevil - - - - -	<u>Hylobius pales</u> Herbst
Papaya fruit-fly a.n.o. - - - - -	<u>Toxotrypana curvicauda</u> Gerst.
Pea aphid - - - - -	<u>Illinoia pisi</u> Kalt.
Peach borer a.n.o. - - - - -	<u>Aegeria exitiosa</u> Say
Peach-twigg moth a.n.o. - - - - -	<u>Anarsia lineatella</u> Zell.
Pear and cherry slug - - - - -	<u>Caliroa cerasi</u> L.
Pear borer - - - - -	<u>Aegeria pyri</u> Harr.
Pear-leaf blister-mite a.n.o. - - - - -	<u>Eriophyes pyri</u> Pgst.
Pear midge - - - - -	<u>Contarinia pyrivora</u> Riley
Pear psylla a.n.o. - - - - -	<u>Psylla pyricola</u> Foerst.
Pear slug a.n.o. - - - - -	<u>Caliroa cerasi</u> L.
Pear thrips a.n.o. - - - - -	<u>Taeniothrips inconsequens</u> Uzel.
Pecan-nut case-bearer - - - - -	<u>Acrobasis hebescella</u> Hulst.
Pecan phylloxera - - - - -	<u>Phylloxera devastatrix</u> Perg.
Pecan shuckworm - - - - -	<u>Laspeyresia caryana</u> Fitch
Periodical cicada a.n.o. - - - - -	<u>Tibicina septendecim</u> L.
Pine bark louse - - - - -	<u>Chermes pinicorticis</u> Fitch
Pine butterfly - - - - -	<u>Neophasia menapia</u> Feld.
Pine leaf-miner - - - - -	<u>Paralechia pinifoliella</u> Chamb.
Pine-leaf scale - - - - -	<u>Chionaspis pinifoliae</u> Fitch
Pine tube-moth - - - - -	<u>Eulia pinatubana</u> Kear.
Plum aphid - - - - -	<u>Hysteroneura setariae</u> Thos.
Plum curculio a.n.o. - - - - -	<u>Conotrachelus nemuphar</u> Hbst.
Plum gall-mite - - - - -	<u>Eriophyes phloeocoptes</u> Nal.
Plum web-spinning sawfly - - - - -	<u>Neurotoma inconspicua</u> Nort.
Poplar borer a.n.o. - - - - -	<u>Saperda calcarata</u> Say
Poplar sawfly - - - - -	<u>Trichocampus viminalis</u> Fallen
Post-oak locust - - - - -	<u>Dendrotettix quercus</u> Pack.
Potato aphid - - - - -	<u>Macrosiphum solanifolii</u> Ashm.
Potato flea-beetle a.n.o. - - - - -	<u>Epitrix cucumeris</u> Harr.
Potato leafhopper - - - - -	<u>Empoasca mali</u> LeB.
Potato-tuber moth a.n.o. - - - - -	<u>Phthorimaea operculella</u> Zell.
Poultry-feather mite - - - - -	<u>Liponyssus silviarum</u> C. & F.
Powder-post beetle - - - - -	<u>Lyctus linearis</u> Goeze and <u>L. planicollis</u> Lec.
Prionus grubs - - - - -	<u>Prionus fissicornis</u> Hald.
Ptinid beetles - - - - -	<u>Hadrobregmus carinatus</u> Say <u>Anobium</u> sp.

Q.

See

Quince curculio a.n.o. - - - - - Conotrachelus crataegi Walsh

R

Raspberry cane-borer a.n.o. - - - - -	- <u>Oberea bimaculata</u> Oliv.
Raspberry fruitworm - - - - -	- <u>Byturus unicolor</u> Say
Raspberry maggot - - - - -	- <u>Phorbia rubivora</u> Coq.
Raspberry sawfly a.n.o. - - - - -	- <u>Monophadnoides rubi</u> Harr.
Red-banded leaf-roller - - - - -	- <u>Eulia velutinana</u> Walk.
Red-necked cane-borer - - - - -	- <u>Agrilus ruficollis</u> Fab.
Rhododendron borer - - - - -	- <u>Sesia rhododendri</u> Beut.
Rhododendron lace-bug (rhododendron tingis) - - - - -	- <u>Stephanitis rhododendri</u> Horv.
Rice weevil a.n.o. - - - - -	- <u>Calendra oryza</u> L.
Roaches - - - - -	- <u>Periplaneta americana</u> L. <u>Blattella germanica</u> L. and <u>Blatta orientalis</u> L.
Rose aphid - - - - -	- <u>Macrosiphum rosae</u> L.
Rose chafer a.n.o. - - - - -	- <u>Macroductylus subspinosus</u> Fab.
Rose curculio - - - - -	- <u>Rhynchites bicolor</u> Fab.
Rose leaf-beetle - - - - -	- <u>Nodonota puncticollis</u> Say
Rose leafhopper - - - - -	- <u>Typhlocyba rosae</u> L.
Rose leaf-tyer - - - - -	- <u>Caccecia rosaceana</u> Harr.
Rose midge - - - - -	- <u>Dasyneura rhodophaga</u> Coq.
Rose sawfly (rose slug) - - - - -	- <u>Calirua aethiops</u> Fab.
Rose scale a.n.o. - - - - -	- <u>Aulacaspis rosae</u> Bouche
Rosy apple aphid - - - - -	- <u>Anuraphis roseus</u> Baker
Roundheaded apple-tree borer a.n.o. - - - - -	- <u>Saperda candida</u> Fab.

S

Saddle-back caterpillar a.n.o. - - - - -	- <u>Sibine stimulea</u> Clem.
Salt-marsh caterpillar a.n.o. - - - - -	- <u>Estigmene acraea</u> Drury
San Jose scale a.n.o. - - - - -	- <u>Aspidiotus perniciosus</u> Comst.
Satin moth - - - - -	- <u>Stilpnotia salicis</u> L.
Sawfly - - - - -	- <u>Neodiprion</u> sp.
Saw-toothed grain beetle - - - - -	- <u>Oryzaephilus</u> (Silvanus) surinamensis L.
Say's blister-beetle - - - - -	- <u>Pomphopoea sayi</u> Lec.
Scarabaeid - - - - -	- <u>Serica anthracina</u> Lec.
Scarabaeid beetle - - - - -	- <u>Serica trociformis</u> Burm.
Screwworm a.n.o. - - - - -	- <u>Chrysomya macellaria</u> Fab.
Scurfy scale a.n.o. - - - - -	- <u>Chionaspis furfura</u> Fitch
Seed-corn maggot - - - - -	- <u>Hylemyia cilicrura</u> Rond.
Sheep scab - - - - -	- <u>Psoroptes communis</u> Furst.
Shot-hole borer a.n.o. - - - - -	- <u>Scolytus rugulosus</u> Ratz.

See

Silverfish - - - - -	<u>Lepisma saccharina</u> L.
Smartweed borer - - - - -	<u>Pyrausta ainsliei</u> Heinr.
Snowball aphid - - - - -	<u>Anuraphis viburnicola</u> Gill.
Snowy tree-cricket a.n.o. - - - - -	<u>Oecanthus niveus</u> DeG.
Sorghum webworm - - - - -	<u>Celama sorghuella</u> Riley
Southern fern cutworm - - - - -	<u>Callopistria floridensis</u> Guen.
Southern green plant-bug - - - - -	<u>Nezara viridula</u> L.
Soy-bean root curculio - - - - -	<u>Sitona crinita</u> Hbst.
Spinose ear tick - - - - -	<u>Ornithodoros megnini</u> Duges
Spittle insects - - - - -	<u>Cercopidae</u> <u>Aphrophora</u> spp.
Spotted blister-beetle - - - - -	<u>Epicauta maculata</u> Say
Spotted cutworm - - - - -	<u>Agrotis c.-nigrum</u> L.
Spring cankerworm a.n.o. - - - - -	<u>Palaeocrita vernata</u> Peck
Spruce budworm - - - - -	<u>Harmoloba fumiferana</u> Clem.
Squash borer a.n.o. - - - - -	<u>Melittia satyriniformis</u> Huebn.
Squash bug a.n.o. - - - - -	<u>Anasa tristis</u> DeG.
Stable fly a.n.o. - - - - -	<u>Stomoxys calcitrans</u> L.
Stalk borer a.n.o. - - - - -	<u>Papaipema nebris</u> Guen. var. <u>nitela</u> Guen.
Sticktight flea - - - - -	<u>Echidnophaga gallinaceus</u> Westw.
Strawberry crown-borer a.n.o. - - - - -	<u>Tyloderma fragariae</u> Riley
Strawberry flea-beetle - - - - -	<u>Haltica inibra</u> Illig.
Strawberry leaf-beetle - - - - -	<u>Paria canella</u> Fab.
Strawberry leaf-roller a.n.o. - - - - -	<u>Ancylis comptana</u> Froehl.
Strawberry-root weevil - - - - -	<u>Otiiorhynchus rugifrons</u> Gyll.
Strawberry weevil a.n.o. - - - - -	<u>Anthonomus signatus</u> Say
Striped cucumber-beetle a.n.o. - - - - -	<u>Diabrotica vittata</u> Fab.
Striped flea-beetle a.n.o. - - - - -	<u>Phyllotreta vittata</u> Fab.
Striped tree-cricket - - - - -	<u>Oecanthus nigricornis</u> Walk.
Sugar-beet webworm - - - - -	<u>Loxostege sticticalis</u> L.
Sugar-cane beetle a.n.o. - - - - -	<u>Euateola rugiceps</u> Lec.
Sugar-cane borer a.n.o. - - - - -	<u>Diatraea saccharalis</u> Fab.
Sunflower peacock fly - - - - -	<u>Straussia longipennis</u> Wied.
Sunflower weevil - - - - -	<u>Rhodesbaenus l3-punctatus</u> Ill.
Sweet-potato whitefly - - - - -	<u>Bemisia inconspicua</u> Quaint.

T-

Tarnished plant-bug a.n.o. - - - - -	<u>Lygus pratensis</u> L.
Tea scale - - - - -	<u>Fiorinia theae</u> Green
Tent caterpillar a.n.o. - - - - -	<u>Malacosoma americana</u> Fab.
Termites - - - - -	<u>Reticulitermes flavipes</u> Kol. <u>R. tibialis</u> Banks
Three-lined potato beetle - - - - -	<u>Lema trilineata</u> Oliv.
Tobacco flea-beetle a.n.o. - - - - -	<u>Epitrix parvula</u> Fab.
Tomatoworm a.n.o. - - - - -	<u>Protoparce sexta</u> Johan.
Tulip scale - - - - -	<u>Toumeyella liriodendri</u> Gmel.
Turkey gnat a.n.o. - - - - -	<u>Simulium meridionale</u> Riley

The first part of the paper is devoted to a general
 discussion of the problem. It is shown that the
 problem is of great importance in the theory of
 functions of a complex variable. The second part
 contains a detailed proof of the theorem. The third
 part is devoted to some applications of the theorem.
 The fourth part contains some remarks and a list of
 references.

See

- Turnip aphid - - - - - Rhopalosiphum pseudobrassicae
Davis
- Tussock moth - - - - - Hemerocampa leucostigma S. & A.
- Twelve-spotted cucumber-beetle - - - - - Diabrotica duodecimpunctata L.
- Two-lined chestnut borer a.n.o. - - - - - Agrilus bilineatus Weber
- Two-lined prominent - - - - - Seriodonta oolineata Comst.
- Two-striped grasshopper - - - - - Melanoplus bivittatus Say

U

- Ugly nest caterpillar - - - - - Archips cerasivorana Fitch
- Umbrella ant - - - - - Atta texana Buck.
- Unicorn caterpillar - - - - - Schizura unicornis S. & A.
- Upland corn wireworm - - - - - Melanotus pilosus Blatch.

V

- Variegated cutworm - - - - - Lydophotia margaritosa Haw.
- Velvet-bean caterpillar - - - - - Anticarsia gemmatilis Huebn.

W

- Walnut caterpillar - - - - - Datana integerrima G. & R.
- Webworms - - - - - Crambidae
- Western army cutworm - - - - - Chorizagrotis auxiliaris Grote
- Western flea-beetle - - - - - Phyllotreta pusilla Horn
- Western-pine beetle a.n.o. - - - - - Dendroctonus brevicornis Lec.
- Western 12-spotted cucumber-beetle - - - - - Diabrotica scior Lec.
- Western wheat-stem maggot - - - - - Pegomya cerealis Gill.
- Wheat-head armyworm a.n.o. - - - - - Heliophila albilinea Huebn.
Nelaeucaria albilinea Huebn.
- Wheat midge a.n.o. - - - - - Contarinia tritici Kirby
- Wheat-sheath gall jointworm - - - - - Harmolita varicornella Doane
- Wheat strawworm - - - - - Harmolita grandis minuta How.
- Wheat wireworm - - - - - Agriotes mancus Say
- White ant - - - - - Reticulitermes flavipes Kol.
R. virginicus Banks
- White grubs - - - - - Phyllophaga spp.
- White-lined sphinx - - - - - Celeris lineata Fab.
- White-marked spider-beetle - - - - - Ptinus fur L.
- White-marked tussock caterpillar - - - - - Hemerocampa leucostigma S. & A.
- White-pine weevil - - - - - Pissodes strobi Peck
- Wingless May-beetle - - - - - Phyllophaga cribrata Lec.
- Wireworms - - - - - Elateridae
- Woolly apple aphid a.n.o. - - - - - Eriosoma lanigerum Hausm.
- Woolly beech aphid - - - - - Prociphilus imbricator Witch
- Woolly elm aphid - - - - - Eriosoma americanum Riley

See

Woolly maple-leaf scale - - - - - -Phenacoccus acericola King

Y

Yellow-fever mosquito - - - - - -Aedes aegypti L.

Yellow mealworm a.n.o. - - - - - Tenebrio molitor L.

Yellow-necked caterpillar - - - - - -Datana ministra Drury

Yellow-striped armyworm - - - - - -Prodenia ornithogalli var.
praefica Grote

Z

Zebra caterpillar a.n.o. - - - - - Mamestra picta Harr.

